

Fig. 37 Conducted Spurious Emission (8DPSK, Ch78, 2.480GHz)

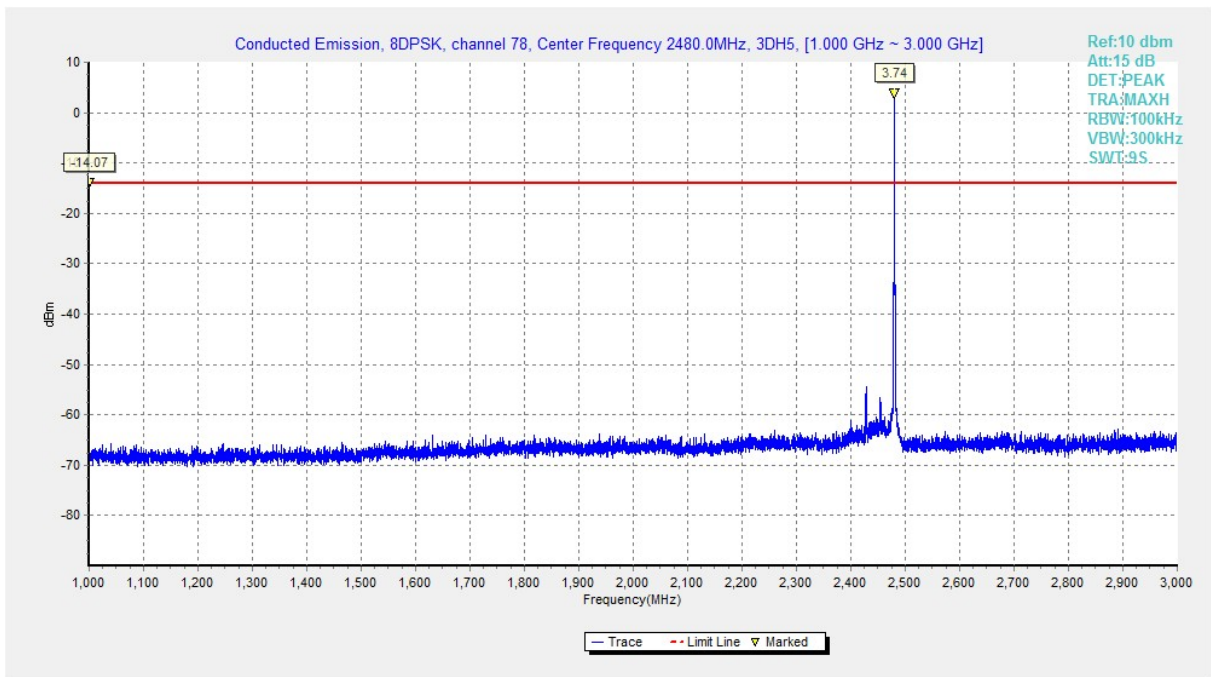


Fig. 38 Conducted Spurious Emission (8DPSK, Ch78, 1GHz-3 GHz)

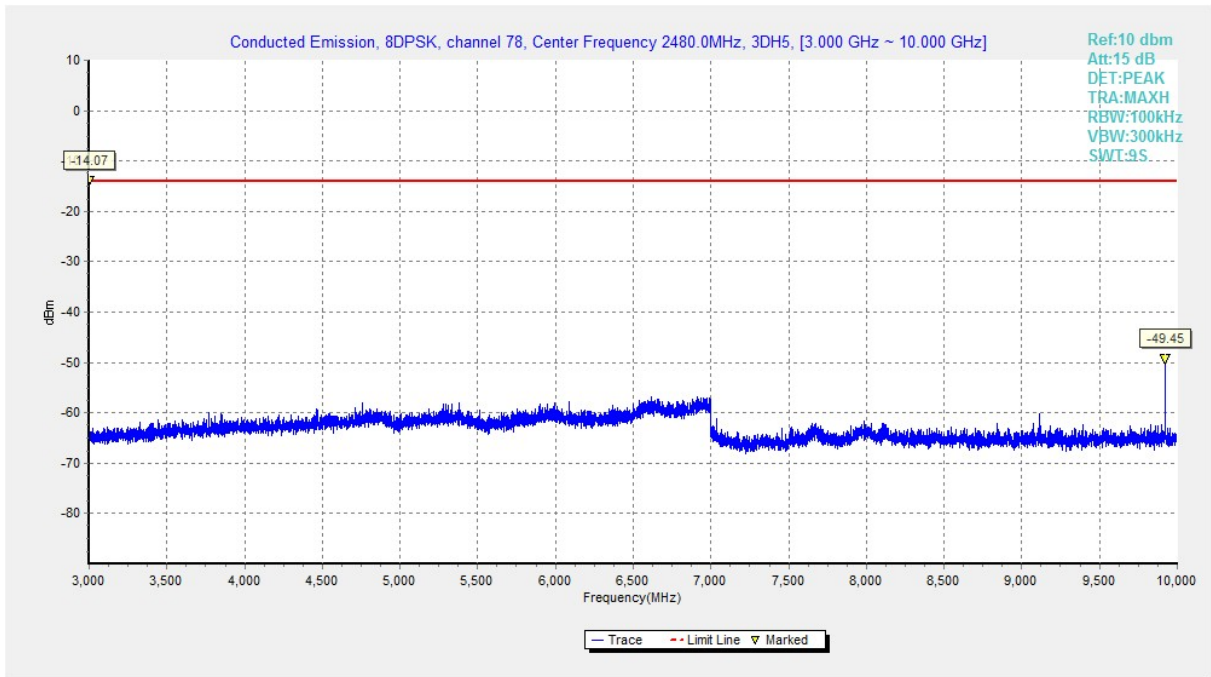


Fig. 39 Conducted Spurious Emission (8DPSK, Ch78, 3GHz-10 GHz)

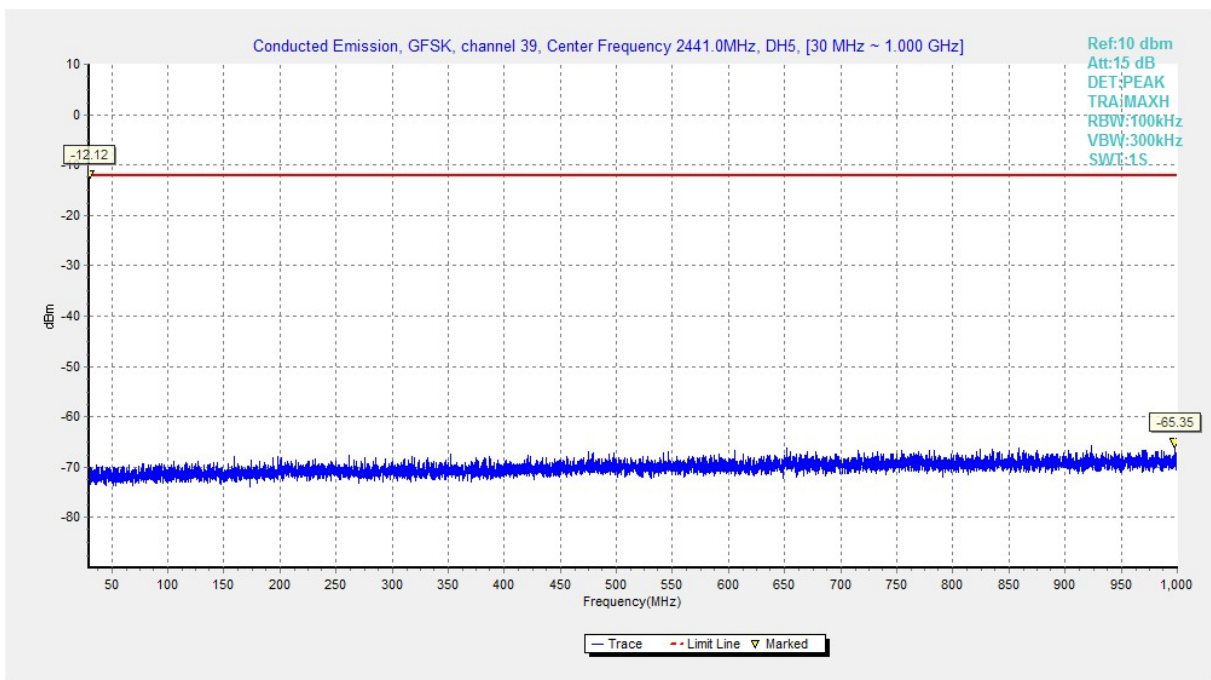


Fig. 40 Conducted Spurious Emission (All channel, 30 MHz-1 GHz)

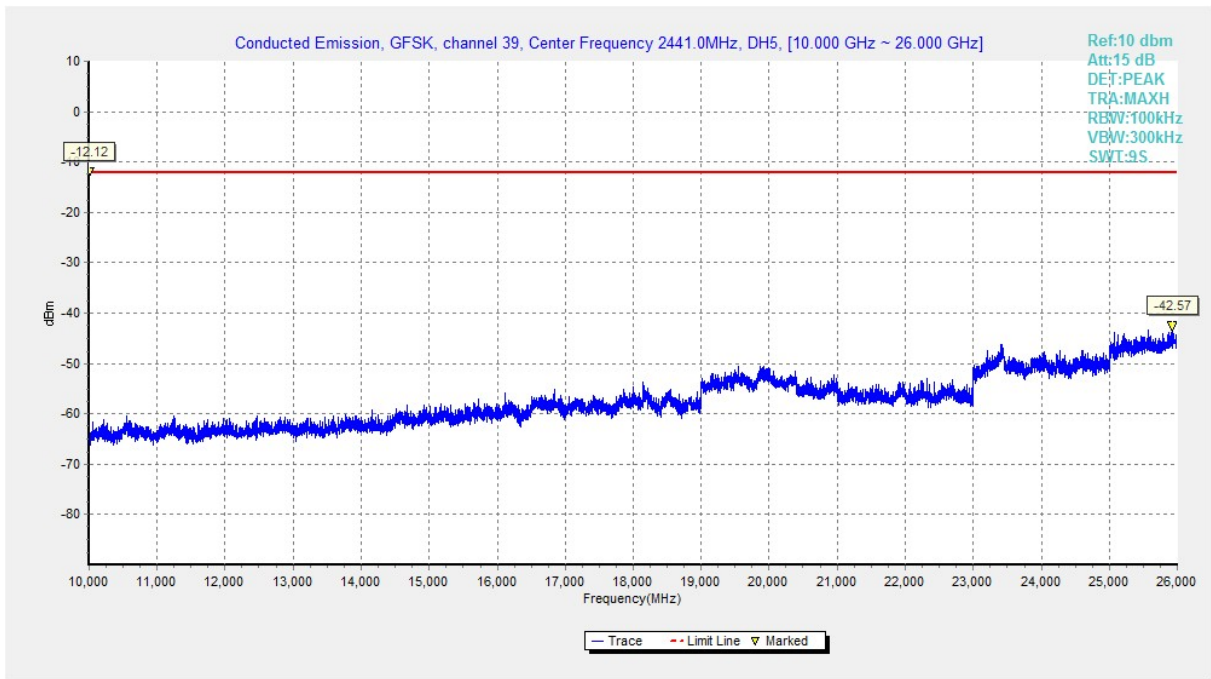


Fig. 41 Conducted Spurious Emission All channel, 10 GHz-26 GHz,)

A.4 Radiated Emission

Measurement Limit:

| Standard | Limit |
|---|------------------------------|
| FCC 47 CFR Part 15.247, 15.205, 15.209 & RSS-247 section 5.5/RSS-Gen section 6.13 | 20dB below peak output power |

In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

Limit in restricted band:

| Frequency of emission (MHz) | Field strength(μV/m) | Measurement distance(meters) |
|-----------------------------|----------------------|------------------------------|
| 0.009-0.490 | 2400/F(kHz) | 300 |
| 0.490-1.705 | 24000/F(kHz) | 30 |
| 1.705-30.0 | 30 | 30 |
| 30-88 | 100 | 3 |
| 88-216 | 150 | 3 |
| 216-960 | 200 | 3 |
| Above 960 | 500 | 3 |

Test Condition:

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

| Frequency of emission (MHz) | RBW/VBW | Sweep Time(s) |
|-----------------------------|---------------|---------------|
| 30-1000 | 120kHz/300kHz | 5 |
| 1000-4000 | 1MHz/3MHz | 15 |
| 4000-18000 | 1MHz/3MHz | 40 |
| 18000-26500 | 1MHz/3MHz | 20 |

Note: According to the performance evaluation, the radiated emission margin of EUT is over 20dB in the band from 9kHz to 30MHz. Therefore, the measurement starts from 30MHz to tenth harmonic.

The measurement results include the horizontal polarization and vertical polarization measurements.

Measurement Results:

| Mode | Channel | Frequency Range | Test Results | Conclusion |
|------------------|------------------------|---------------------|--------------|------------|
| GFSK | 0 | 1 GHz ~3 GHz | Fig.42 | P |
| | | 3 GHz ~18 GHz | Fig.43 | P |
| | 39 | 1 GHz ~3 GHz | Fig.44 | P |
| | | 3 GHz ~18 GHz | Fig.45 | P |
| | 78 | 1 GHz ~3 GHz | Fig.46 | P |
| | | 3 GHz ~18 GHz | Fig.47 | P |
| | Restricted Band(CH0) | 2.38 GHz ~ 2.45 GHz | Fig.48 | P |
| | Restricted Band (CH78) | 2.45 GHz ~ 2.5 GHz | Fig.49 | P |
| $\pi/4$ DQPSK | 0 | 1 GHz ~3 GHz | Fig.50 | P |
| | | 3 GHz ~18 GHz | Fig.51 | P |
| | 39 | 1 GHz ~3 GHz | Fig.52 | P |
| | | 3 GHz ~18 GHz | Fig.53 | P |
| | 78 | 1 GHz ~3 GHz | Fig.54 | P |
| | | 3 GHz ~18 GHz | Fig.55 | P |
| | Restricted Band (CH0) | 2.38 GHz ~ 2.45 GHz | Fig.56 | P |
| | Restricted Band (CH78) | 2.45 GHz ~ 2.5 GHz | Fig.57 | P |
| 8DPSK | 0 | 1 GHz ~3 GHz | Fig.58 | P |
| | | 3 GHz ~18 GHz | Fig.59 | P |
| | 39 | 1 GHz ~3 GHz | Fig.60 | P |
| | | 3 GHz ~18 GHz | Fig.61 | P |
| | 78 | 1 GHz ~3 GHz | Fig.62 | P |
| | | 3 GHz ~18 GHz | Fig.63 | P |
| | Restricted Band (CH0) | 2.38 GHz ~ 2.45 GHz | Fig.64 | P |
| | Restricted Band (CH78) | 2.45 GHz ~ 2.5 GHz | Fig.65 | P |
| / | All channels | 9 kHz ~30 MHz | Fig.66 | P |
| | | 30 MHz ~1 GHz | Fig.67 | P |
| | | 18 GHz ~26.5 GHz | Fig.68 | P |



Worst Case Result

GFSK CH39 (1-18GHz)

| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Pol | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-----|--------------|
| 7323.000000 | 46.60 | 74.00 | 27.40 | H | 2.2 |
| 9764.500000 | 53.75 | 74.00 | 20.25 | V | 4.9 |
| 12485.000000 | 48.21 | 74.00 | 25.79 | V | 8.9 |
| 14512.500000 | 50.48 | 74.00 | 23.52 | H | 11.7 |
| 16539.000000 | 51.48 | 74.00 | 22.52 | H | 15.2 |
| 17893.000000 | 52.45 | 74.00 | 21.55 | V | 16.4 |

| Frequency (MHz) | Average (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Pol | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-----|--------------|
| 7323.000000 | 39.51 | 54.00 | 14.49 | H | 2.2 |
| 9764.000000 | 48.27 | 54.00 | 5.73 | V | 5.0 |
| 12204.500000 | 36.68 | 54.00 | 17.32 | H | 8.4 |
| 14488.000000 | 37.70 | 54.00 | 16.30 | H | 11.7 |
| 16704.500000 | 39.70 | 54.00 | 14.30 | V | 15.4 |
| 17909.500000 | 40.61 | 54.00 | 13.39 | V | 17.4 |

$\pi/4$ DQPSK CH39 (1-18GHz)

| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Pol | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-----|--------------|
| 9765.000000 | 50.78 | 74.00 | 23.22 | H | 4.9 |
| 11486.000000 | 47.31 | 74.00 | 26.69 | H | 6.9 |
| 13091.000000 | 47.77 | 74.00 | 26.23 | V | 9.5 |
| 14457.000000 | 49.72 | 74.00 | 24.28 | V | 11.7 |
| 16464.500000 | 50.54 | 74.00 | 23.46 | H | 15.0 |
| 17906.000000 | 52.00 | 74.00 | 22.00 | V | 17.2 |

| Frequency (MHz) | Average (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Pol | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-----|--------------|
| 9765.000000 | 41.08 | 54.00 | 12.92 | H | 4.9 |
| 11484.500000 | 34.64 | 54.00 | 19.36 | H | 6.8 |
| 13131.000000 | 36.02 | 54.00 | 17.98 | V | 9.7 |
| 14507.000000 | 37.25 | 54.00 | 16.75 | V | 11.7 |
| 16700.000000 | 39.40 | 54.00 | 14.60 | V | 15.4 |
| 17909.500000 | 40.31 | 54.00 | 13.69 | H | 17.4 |

**8DPSK CH39 (1-18GHz)**

| Frequency (MHz) | MaxPeak (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Pol | Corr. (dB/m) |
|-----------------|------------------------|----------------------|-------------|-----|--------------|
| 9764.500000 | 48.95 | 74.00 | 25.05 | H | 4.9 |
| 11458.000000 | 46.50 | 74.00 | 27.50 | V | 6.8 |
| 13174.000000 | 47.81 | 74.00 | 26.19 | H | 9.4 |
| 14501.500000 | 49.41 | 74.00 | 24.59 | H | 11.7 |
| 16917.000000 | 51.32 | 74.00 | 22.68 | H | 16.0 |
| 17912.000000 | 51.71 | 74.00 | 22.29 | H | 17.3 |

| Frequency (MHz) | Average (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Pol | Corr. (dB/m) |
|-----------------|------------------------|----------------------|-------------|-----|--------------|
| 9764.000000 | 38.91 | 54.00 | 15.09 | H | 5.0 |
| 11430.500000 | 34.57 | 54.00 | 19.43 | H | 6.8 |
| 12941.500000 | 35.85 | 54.00 | 18.15 | V | 9.5 |
| 14479.000000 | 37.27 | 54.00 | 16.73 | V | 11.6 |
| 16919.500000 | 39.30 | 54.00 | 14.70 | V | 16.0 |
| 17909.500000 | 40.25 | 54.00 | 13.75 | H | 17.4 |

Note:

A "reference path loss" is established and the A_{Rpl} is the attenuation of "reference path loss", and Antenna Factor, the gain of the preamplifier, the cable loss. P_{Mea} is the field strength recorded from the instrument.

The measurement results are obtained as described below:

Result= P_{Mea} +Cable Loss +Antenna Factor-Gain of the preamplifier.

See below for test graphs.

Conclusion: Pass

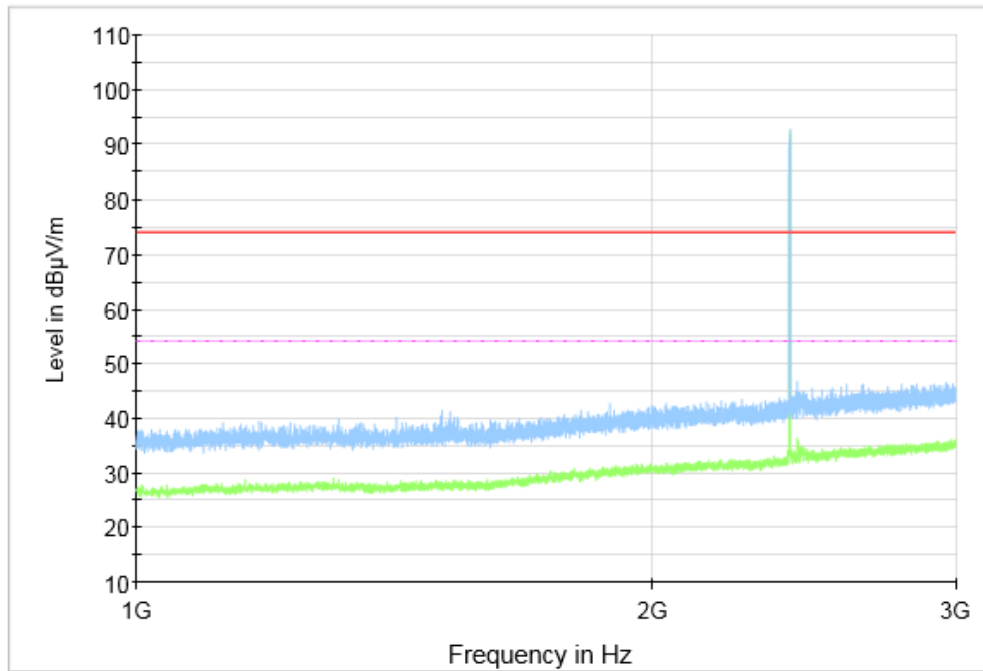


Fig. 42 Radiated Spurious Emission (GFSK, Ch0, 1 GHz ~3 GHz)

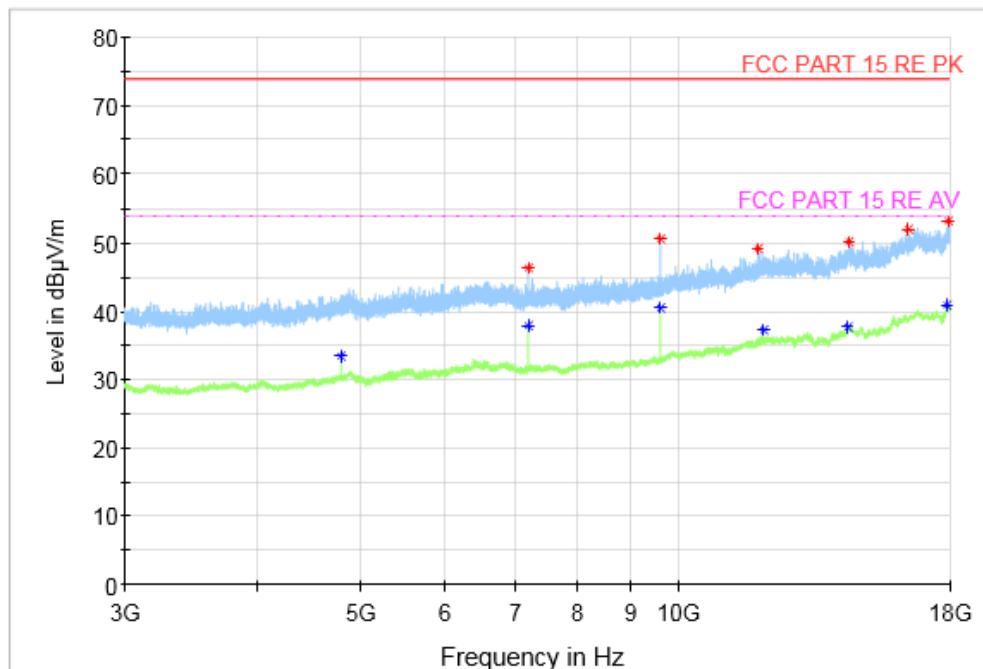


Fig. 43 Radiated Spurious Emission (GFSK, Ch0, 3 GHz ~18 GHz)

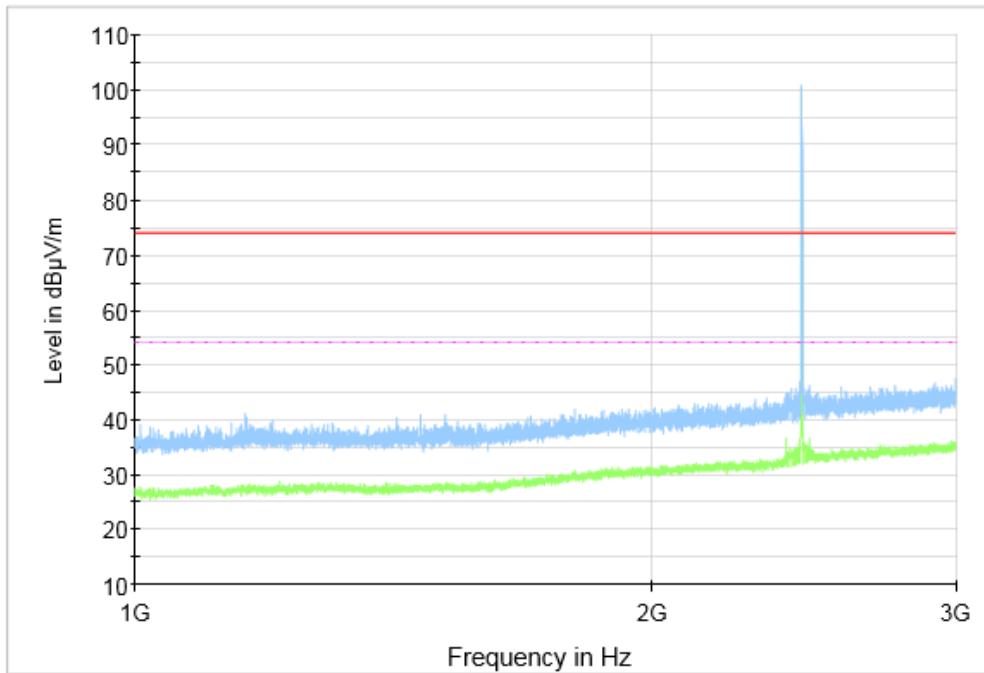


Fig. 44 Radiated Spurious Emission (GFSK, Ch39, 1 GHz ~3 GHz)

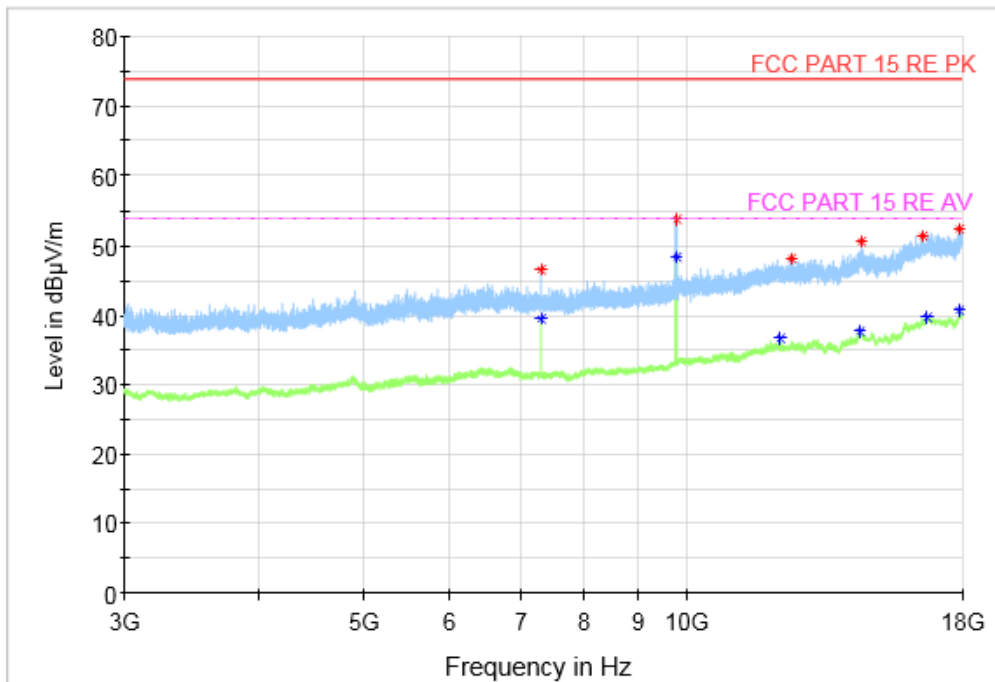


Fig. 45 Radiated Spurious Emission (GFSK, Ch39, 3 GHz ~18 GHz)

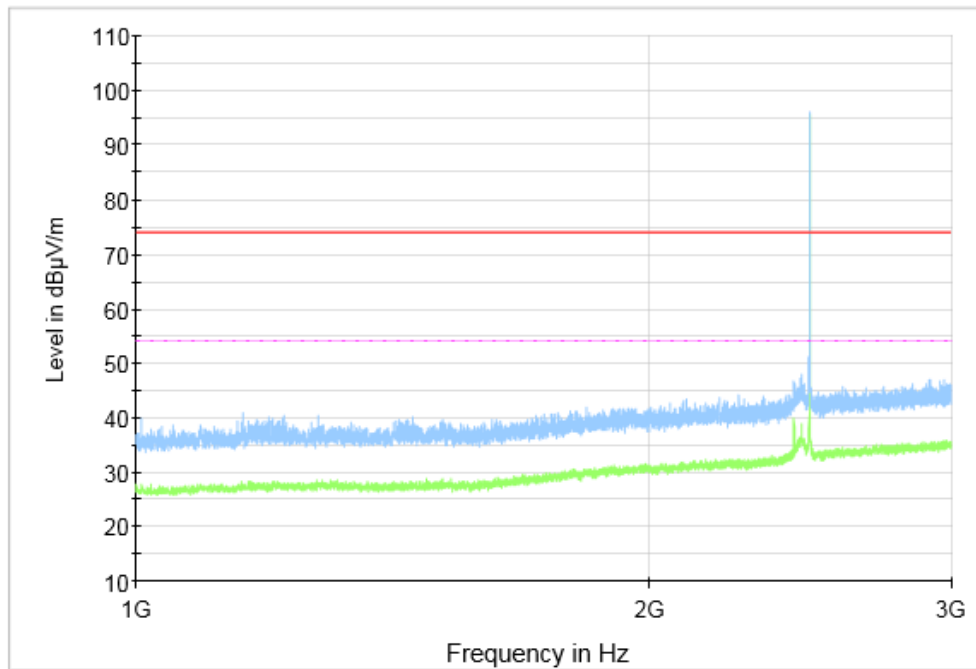


Fig. 46 Radiated Spurious Emission (GFSK, Ch78, 1 GHz ~3 GHz)

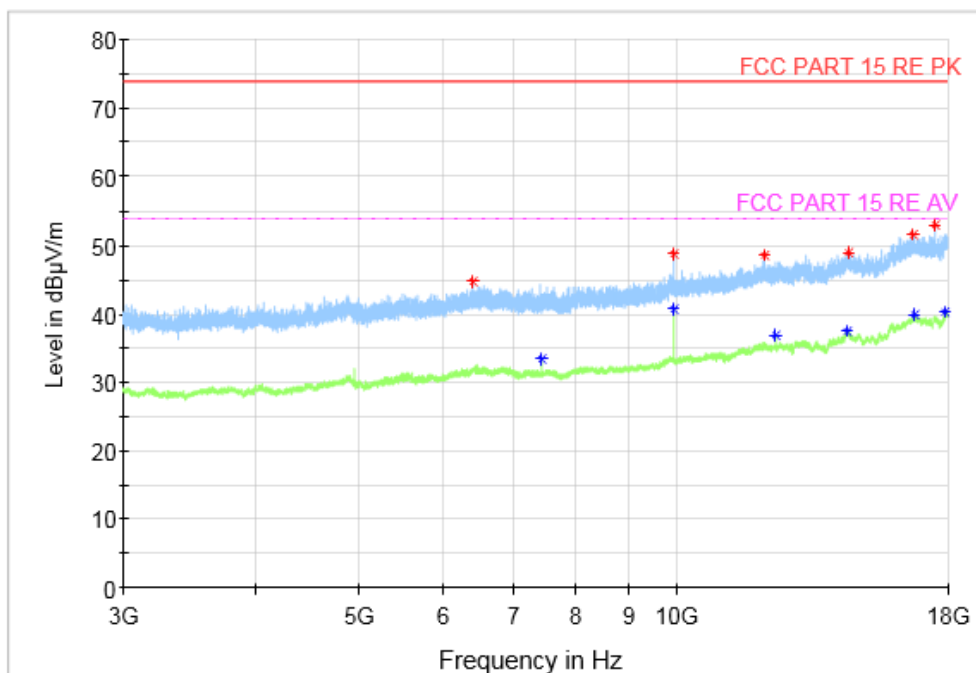


Fig. 47 Radiated Spurious Emission (GFSK, Ch78, 3 GHz ~18 GHz)

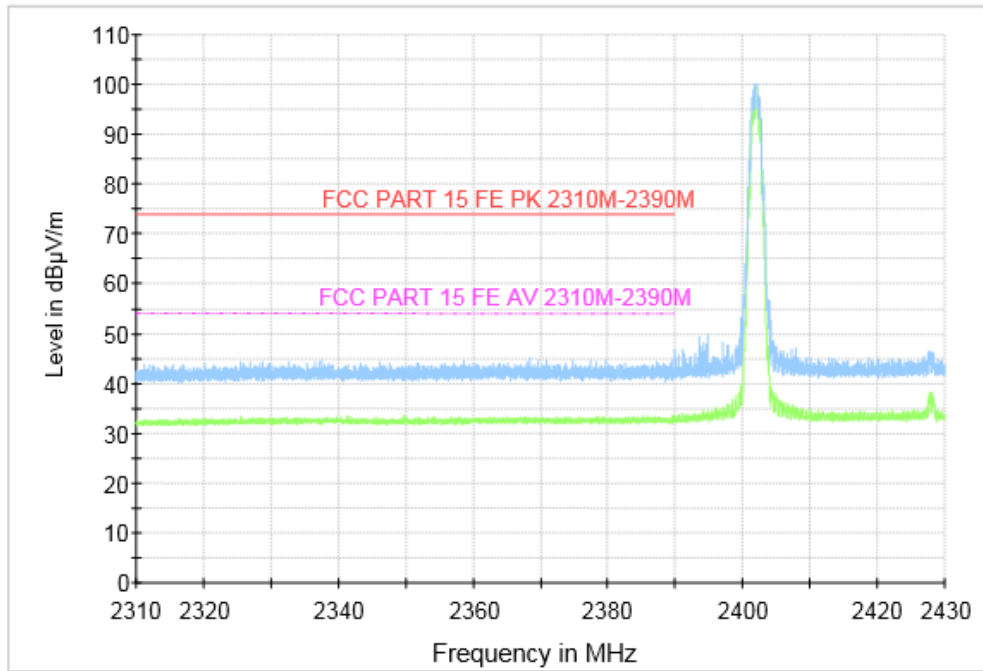


Fig. 48 Radiated Band Edges (GFSK, Ch0, 2380GHz~2450GHz)

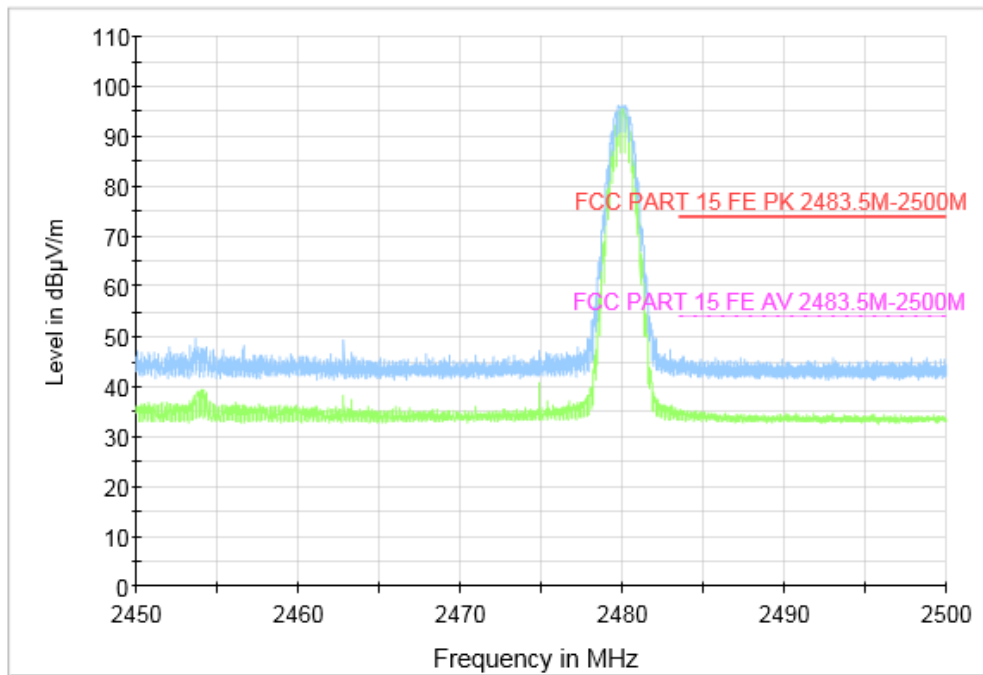


Fig. 49 Radiated Band Edges (GFSK, Ch78, 2450GHz~2500GHz)

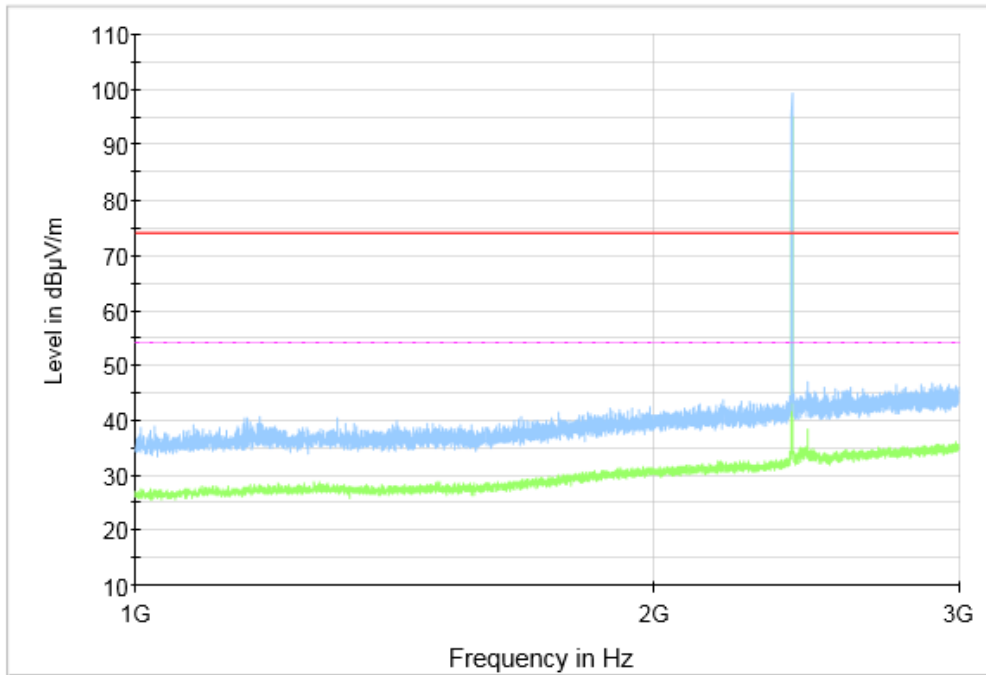


Fig. 50 Radiated Spurious Emission ($\pi/4$ DQPSK, Ch0, 1 GHz ~3 GHz)

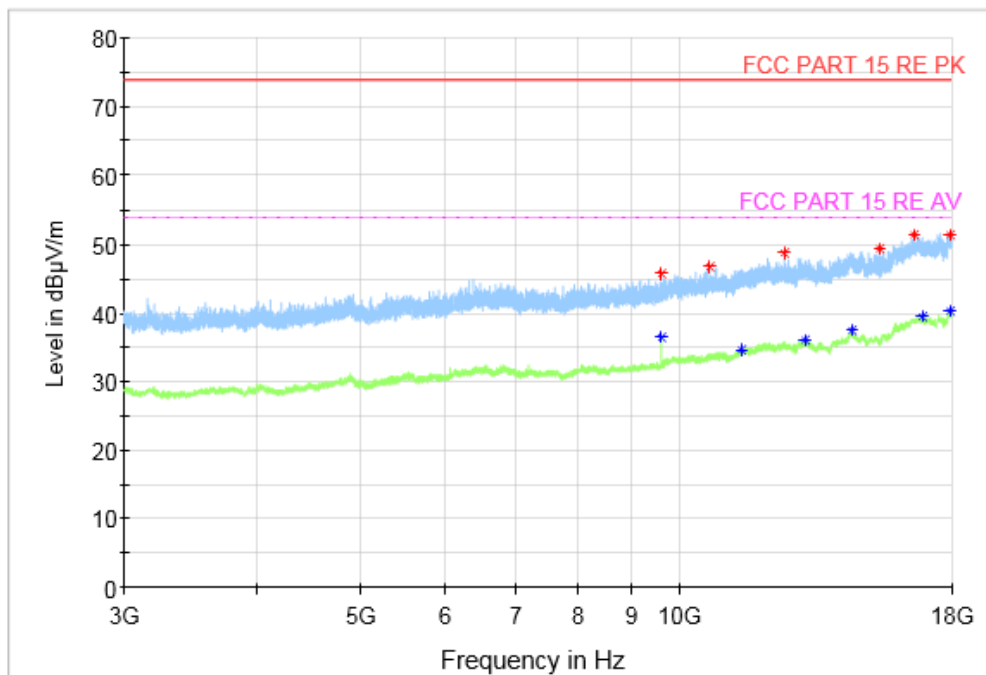


Fig. 51 Radiated Spurious Emission ($\pi/4$ DQPSK, Ch0, 3 GHz ~18 GHz)

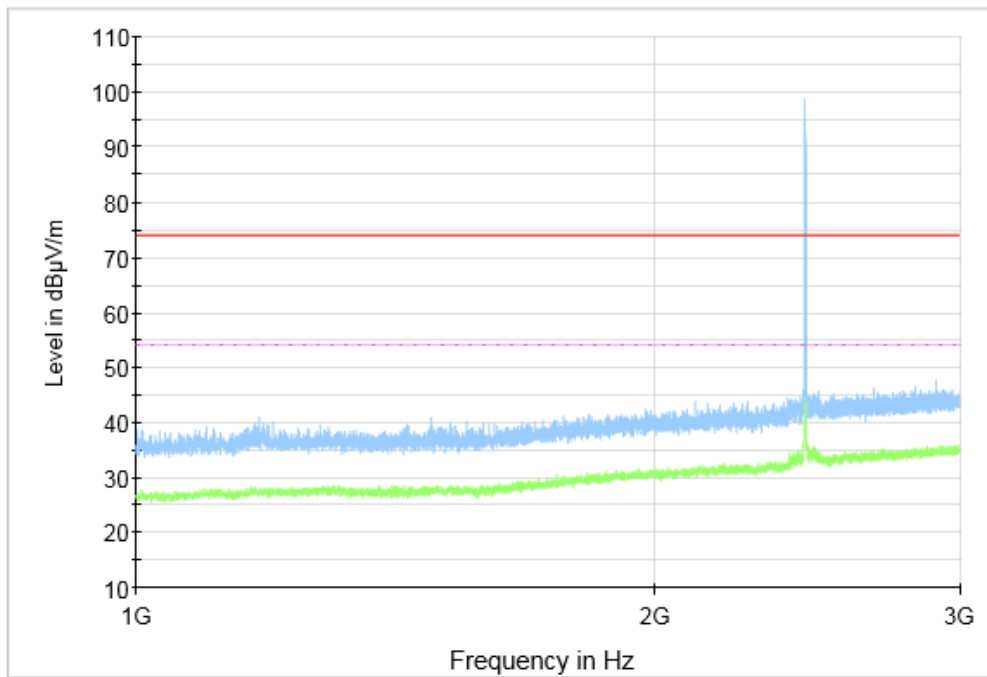


Fig. 52 Radiated Spurious Emission ($\pi/4$ DQPSK, Ch39, 1 GHz ~3 GHz)

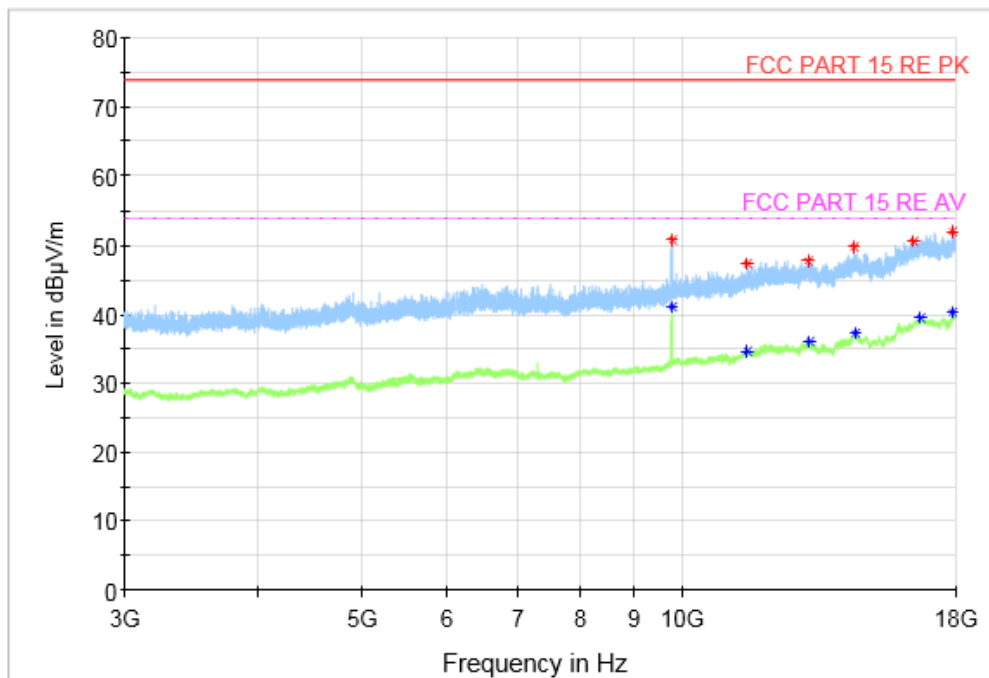


Fig. 53 Radiated Spurious Emission ($\pi/4$ DQPSK, Ch39, 3 GHz ~18 GHz)

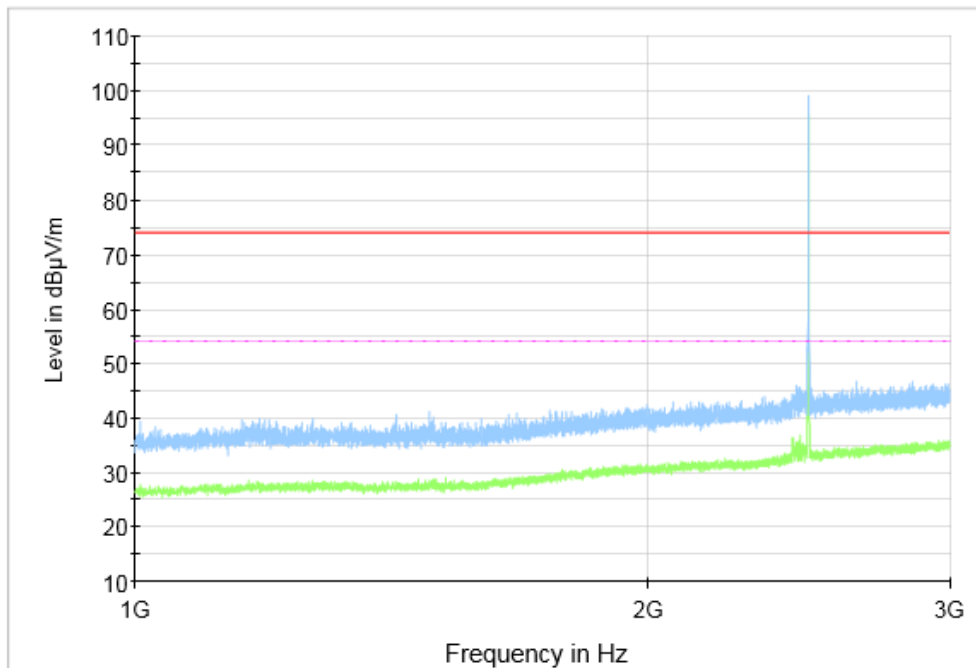


Fig. 54 Radiated Spurious Emission ($\pi/4$ DQPSK, Ch78, 1 GHz ~3 GHz)

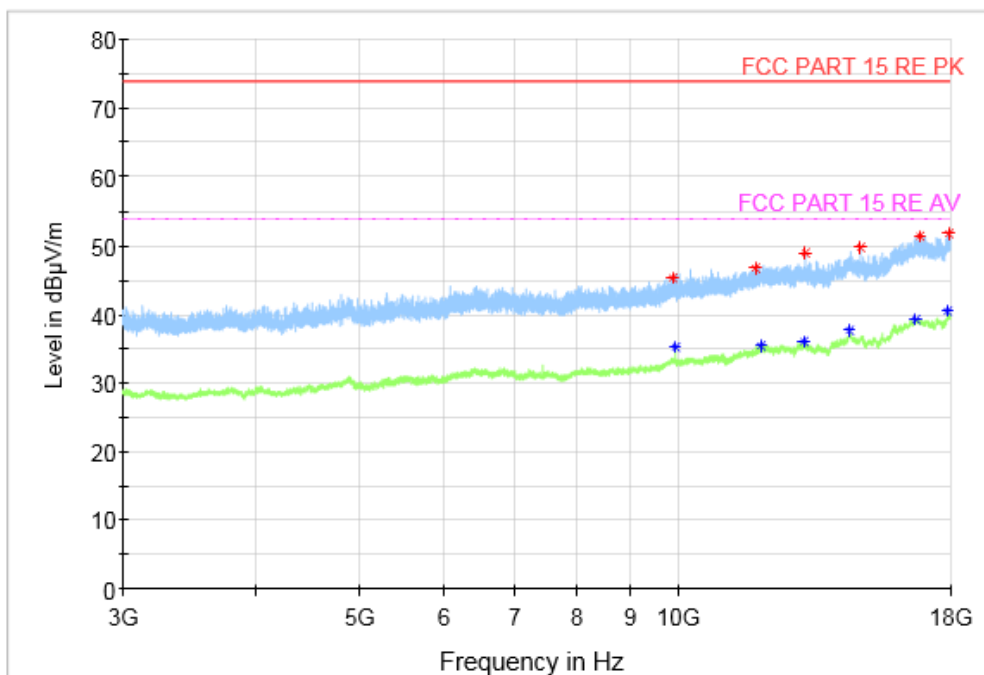


Fig. 55 Radiated Spurious Emission ($\pi/4$ DQPSK, Ch78, 3 GHz ~18 GHz)

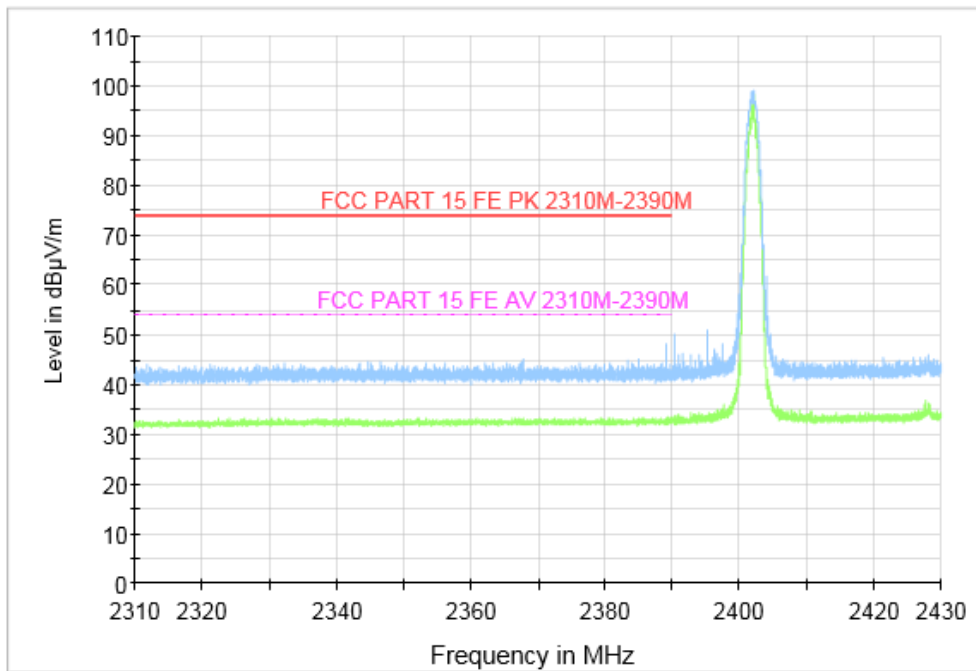


Fig. 56 Radiated Band Edges ($\pi/4$ DQPSK, Ch0, 2380GHz~2450GHz)

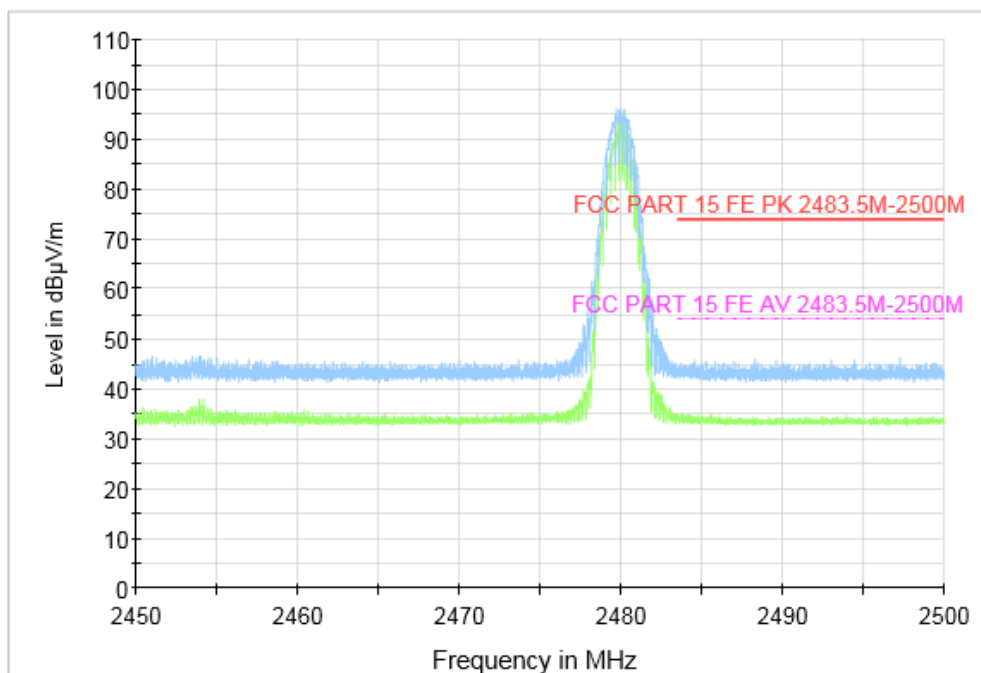


Fig. 57 Radiated Band Edges ($\pi/4$ DQPSK, Ch78, 2450GHz~2500GHz)

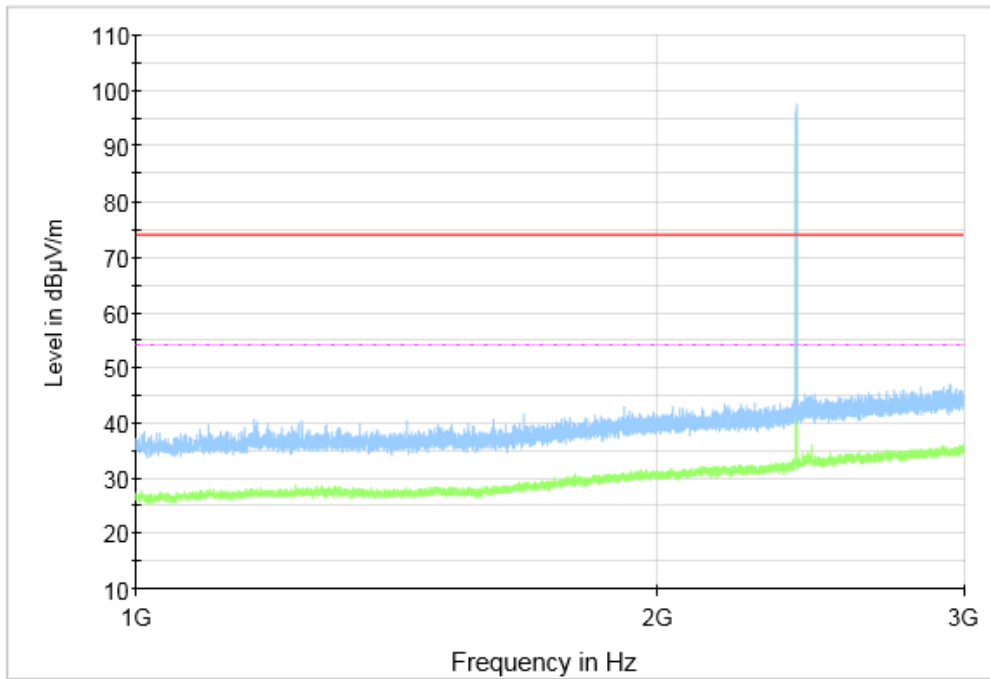


Fig. 58 Radiated Spurious Emission (8DPSK, Ch0, 1 GHz ~3 GHz)

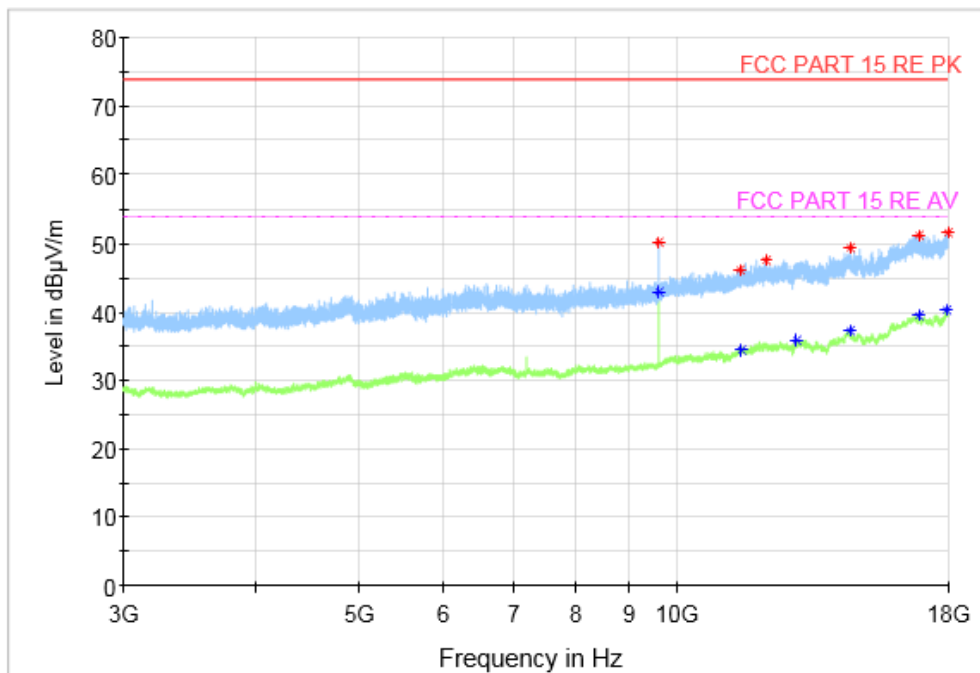


Fig. 59 Radiated Spurious Emission (8DPSK, Ch0, 3 GHz ~18 GHz)

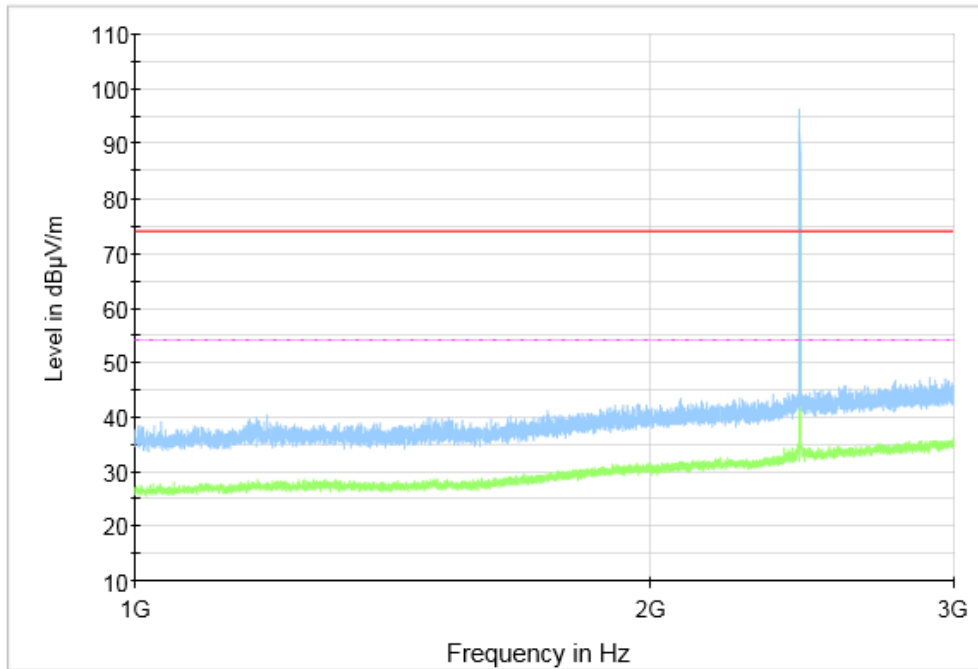


Fig. 60 Radiated Spurious Emission (8DPSK, Ch39, 1 GHz ~3 GHz)

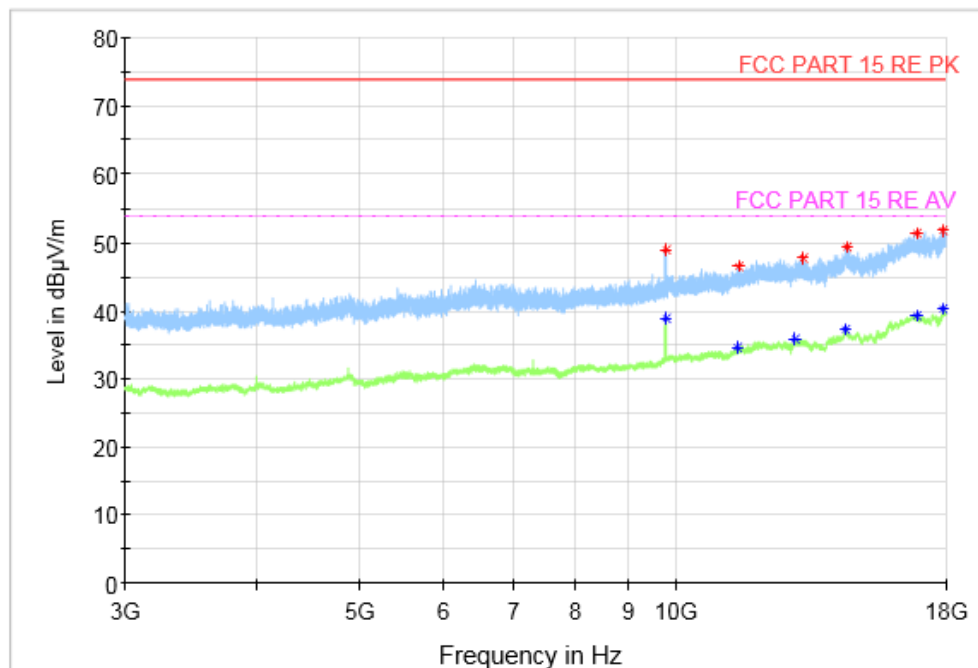


Fig. 61 Radiated Spurious Emission (8DPSK, Ch39, 3 GHz ~18 GHz)

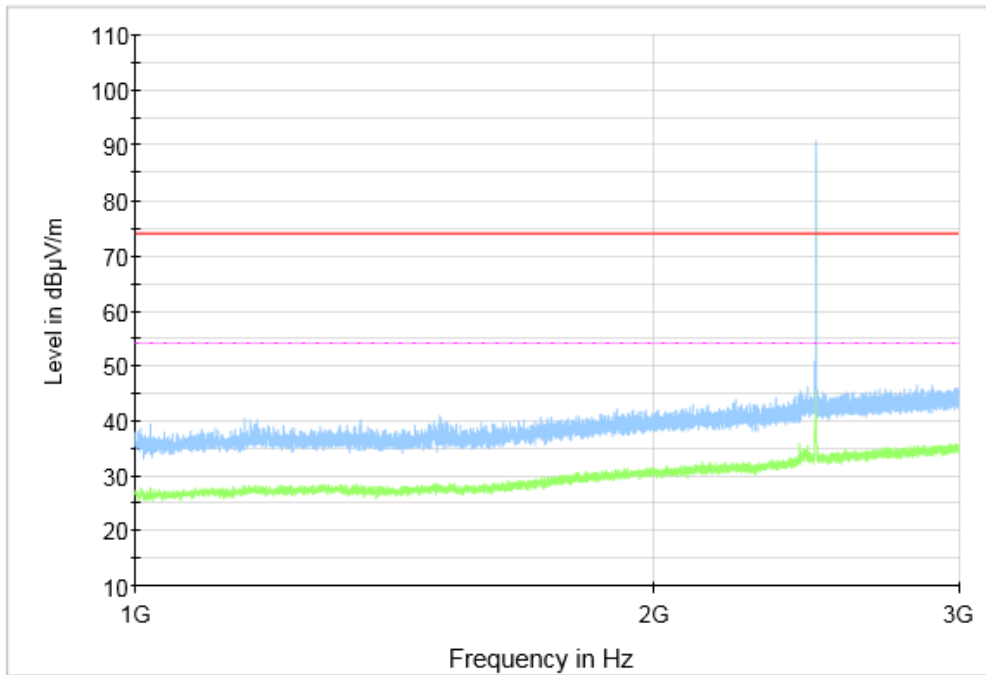


Fig. 62 Radiated Spurious Emission (8DPSK, Ch78, 1 GHz ~3 GHz)

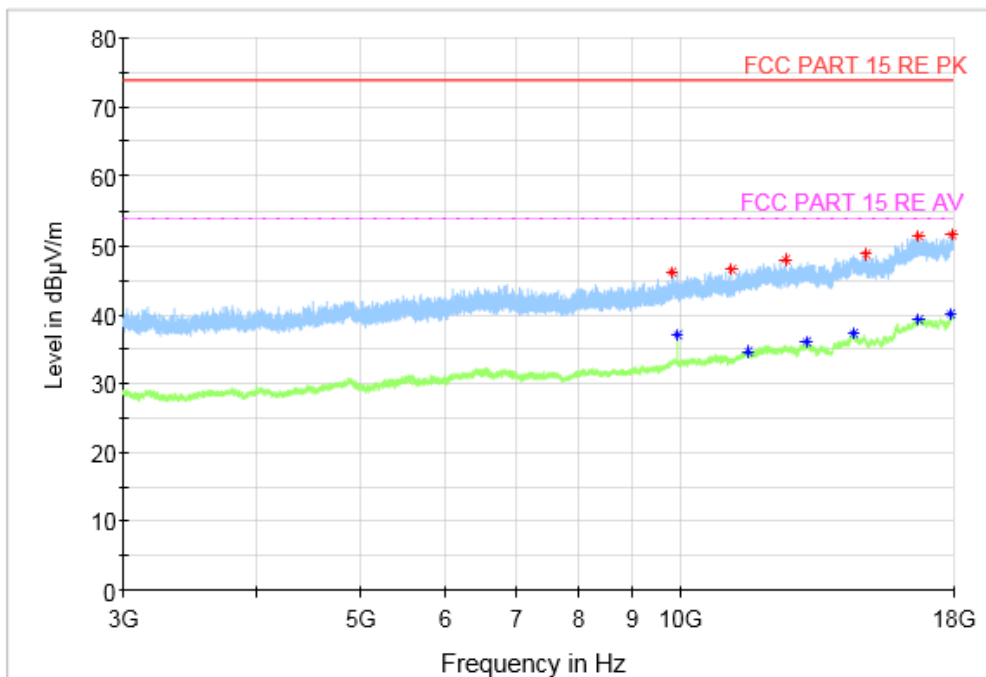


Fig. 63 Radiated Spurious Emission (8DPSK, Ch78, 3 GHz ~18 GHz)

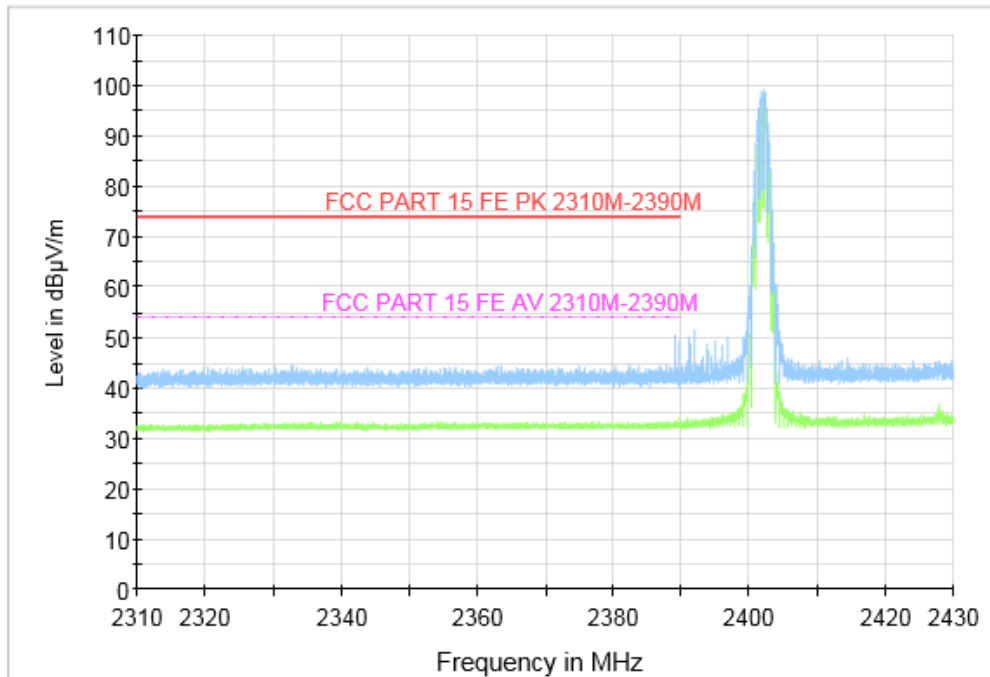


Fig. 64 Radiated Band Edges (8DPSK, Ch0, 2380GHz~2450GHz)

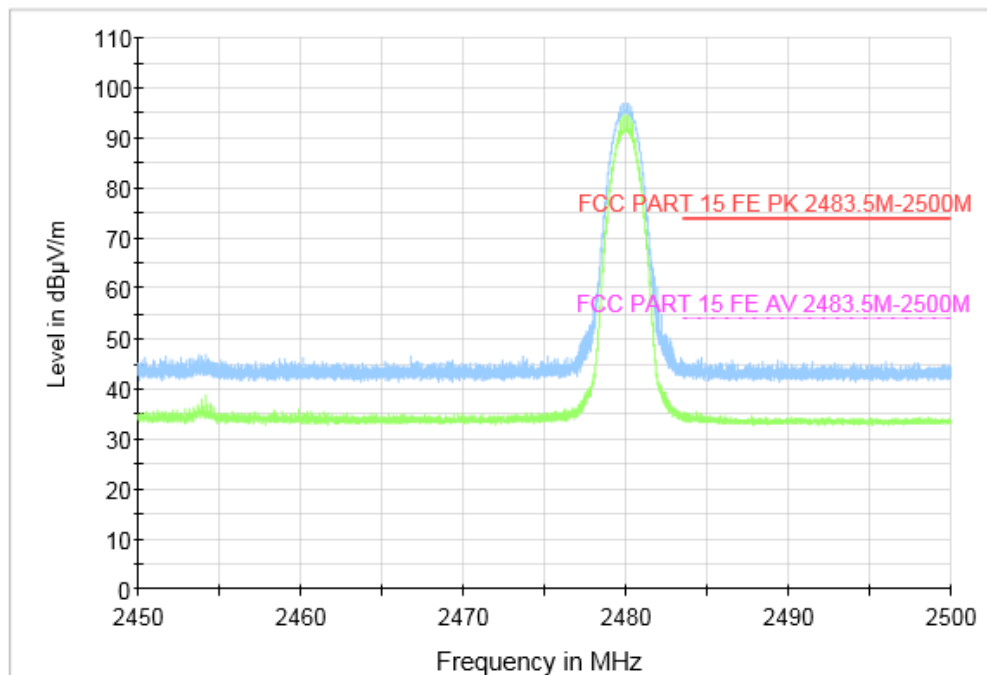


Fig. 65 Radiated Band Edges (8DPSK, Ch78, 2450GHz~2500GHz)

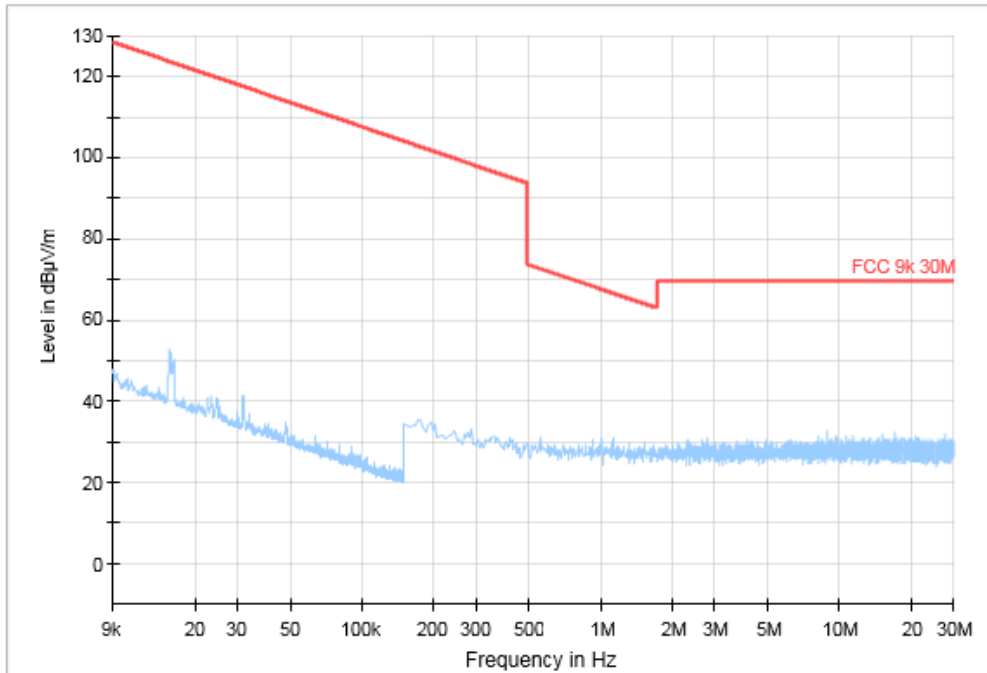


Fig. 66 Radiated Spurious Emission (All Channels, 9 kHz ~30 MHz)

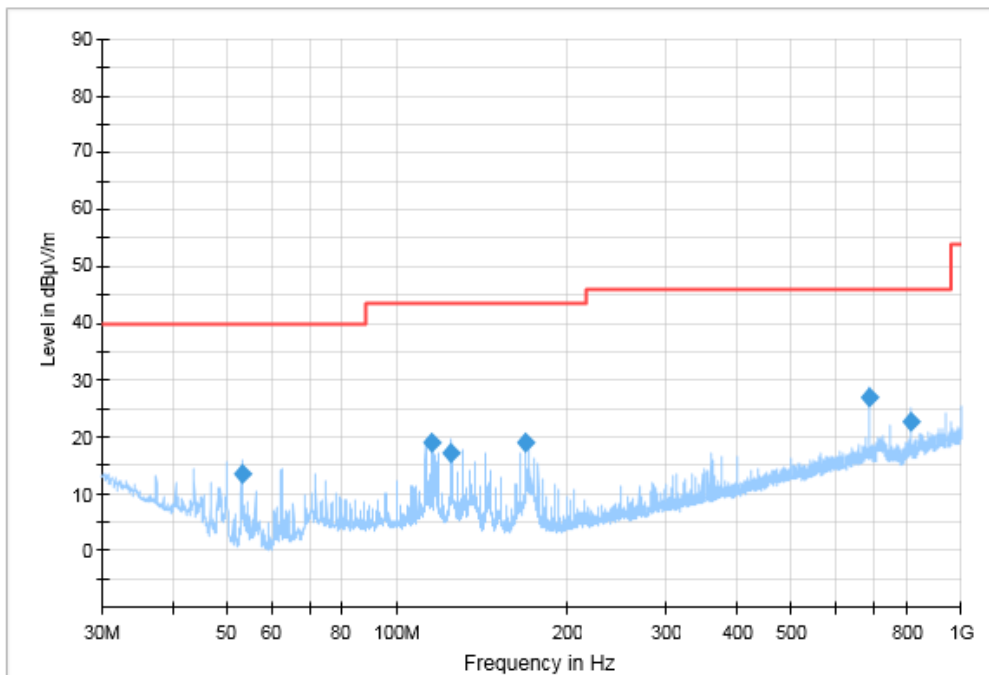


Fig. 67 Radiated Spurious Emission (All Channels, 30 MHz ~1 GHz)

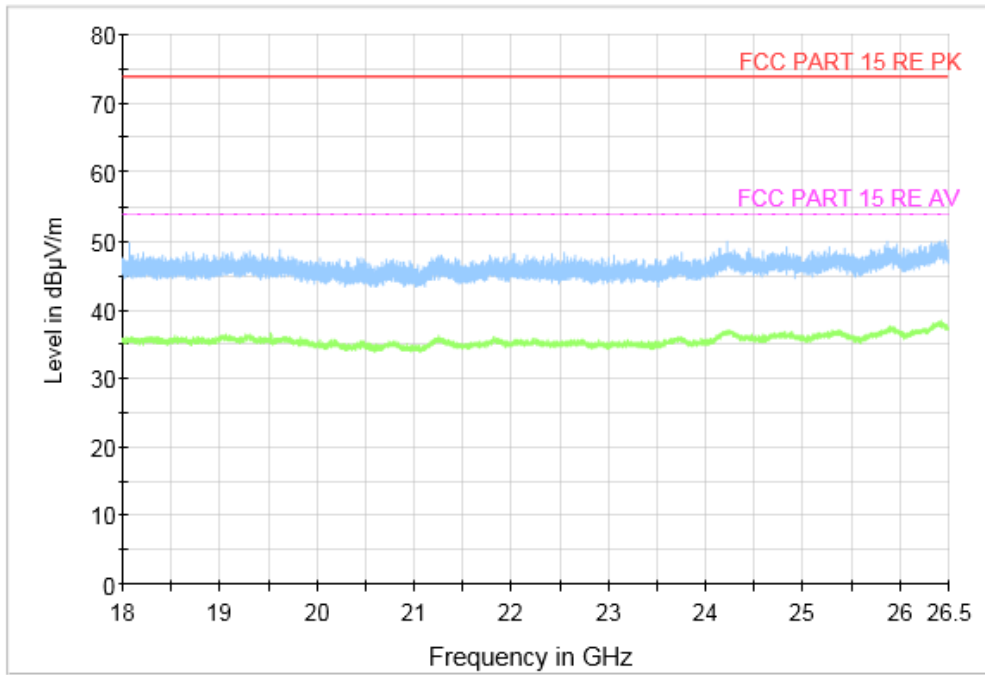


Fig. 68 Radiated Spurious Emission (All Channels, 18 GHz ~26.5 GHz)

A.5 20dB Bandwidth

Measurement Limit:

| Standard | Limit (kHz) |
|--|-------------|
| FCC 47 CFR Part 15.247 (a) & RSS-247 Section 5.1 | / |

Measurement Result:

| Mode | Channel | 20dB Bandwidth (kHz) | | conclusion |
|---------------|---------|-----------------------|---------|------------|
| | | Fig. | Value | |
| GFSK | 0 | Fig.69 | 1017.75 | / |
| | 39 | Fig.70 | 940.50 | |
| | 78 | Fig.71 | 981.75 | |
| $\pi/4$ DQPSK | 0 | Fig.72 | 1227.00 | / |
| | 39 | Fig.73 | 1241.25 | |
| | 78 | Fig.74 | 1255.50 | |
| 8DPSK | 0 | Fig.75 | 1233.00 | / |
| | 39 | Fig.76 | 1246.50 | |
| | 78 | Fig.77 | 1240.50 | |

See below for test graphs.

Conclusion: PASS

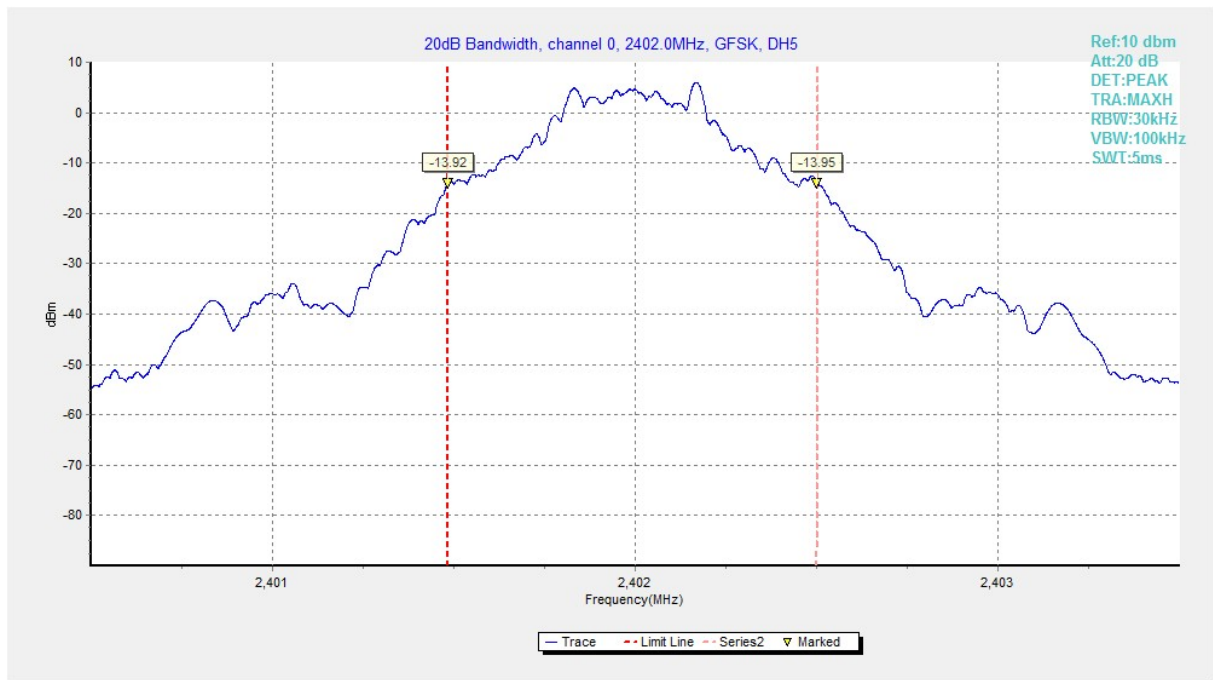


Fig. 69 20dB Bandwidth (GFSK, Ch 0)

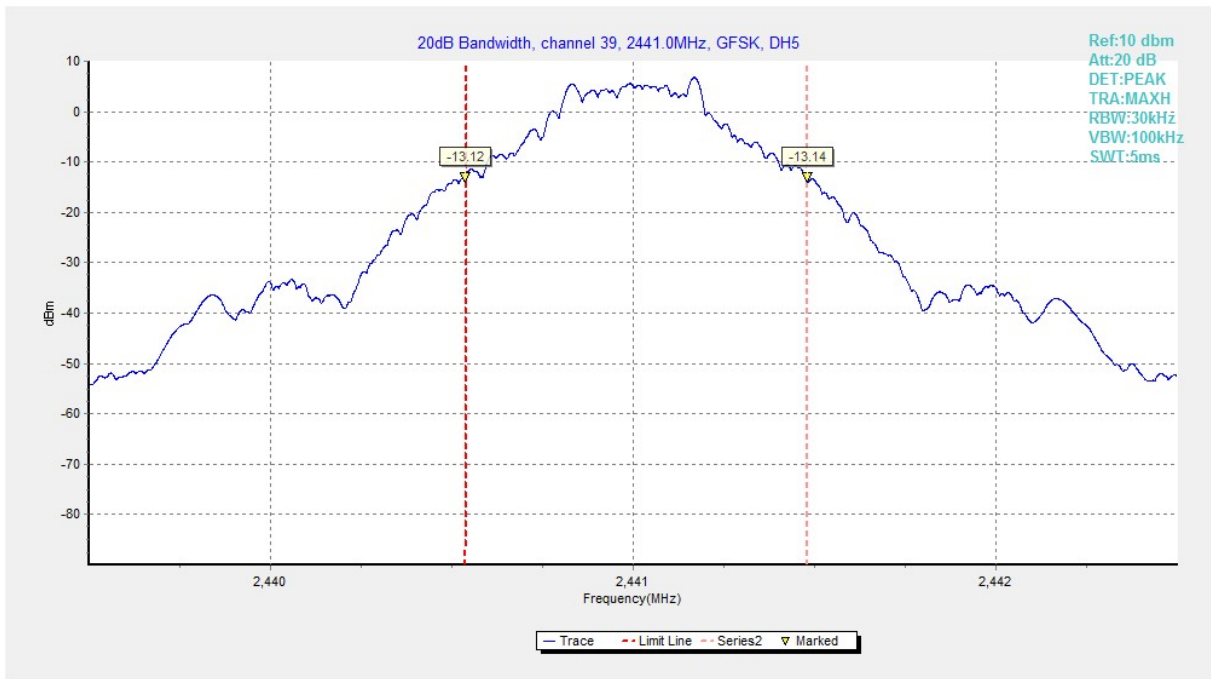


Fig. 70 20dB Bandwidth (GFSK, Ch 39)

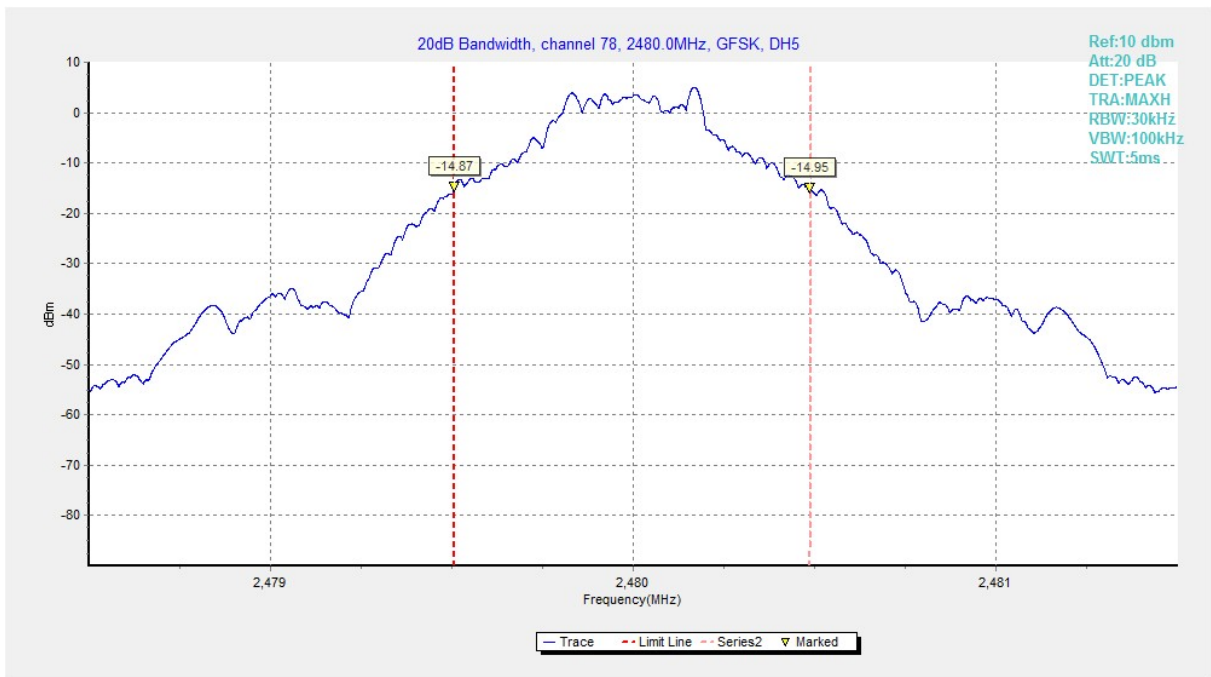


Fig. 71 20dB Bandwidth (GFSK, Ch 78)

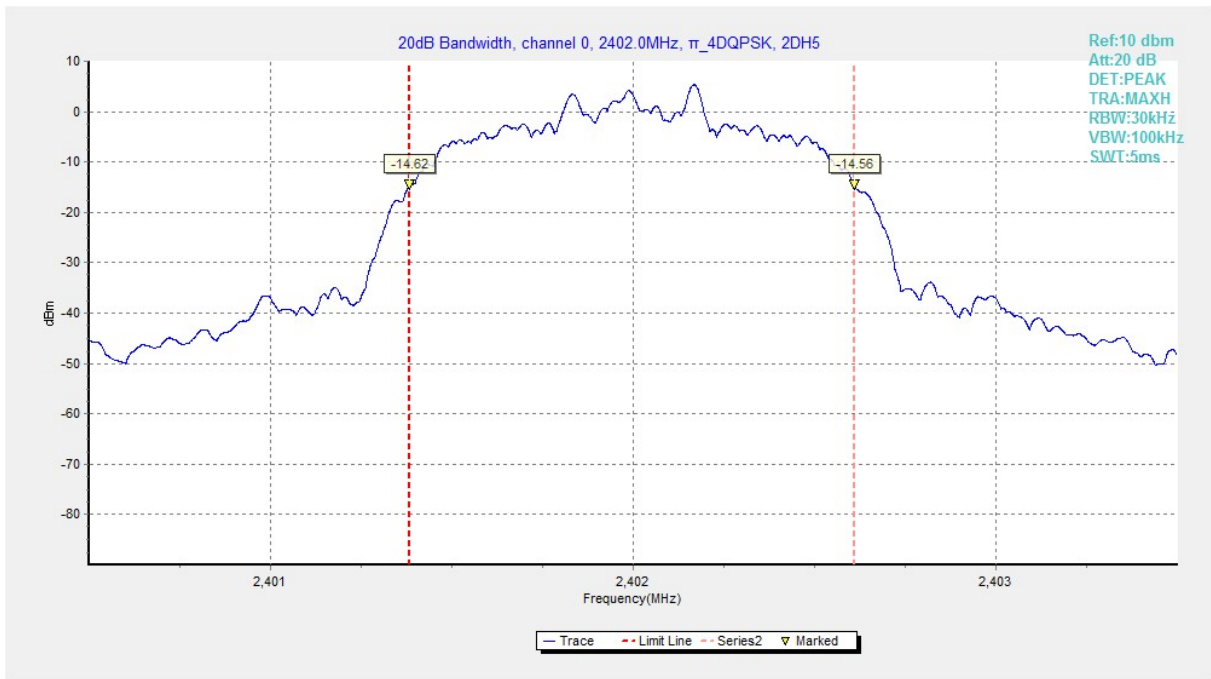


Fig. 72 20dB Bandwidth (π /4 DQPSK, Ch 0)

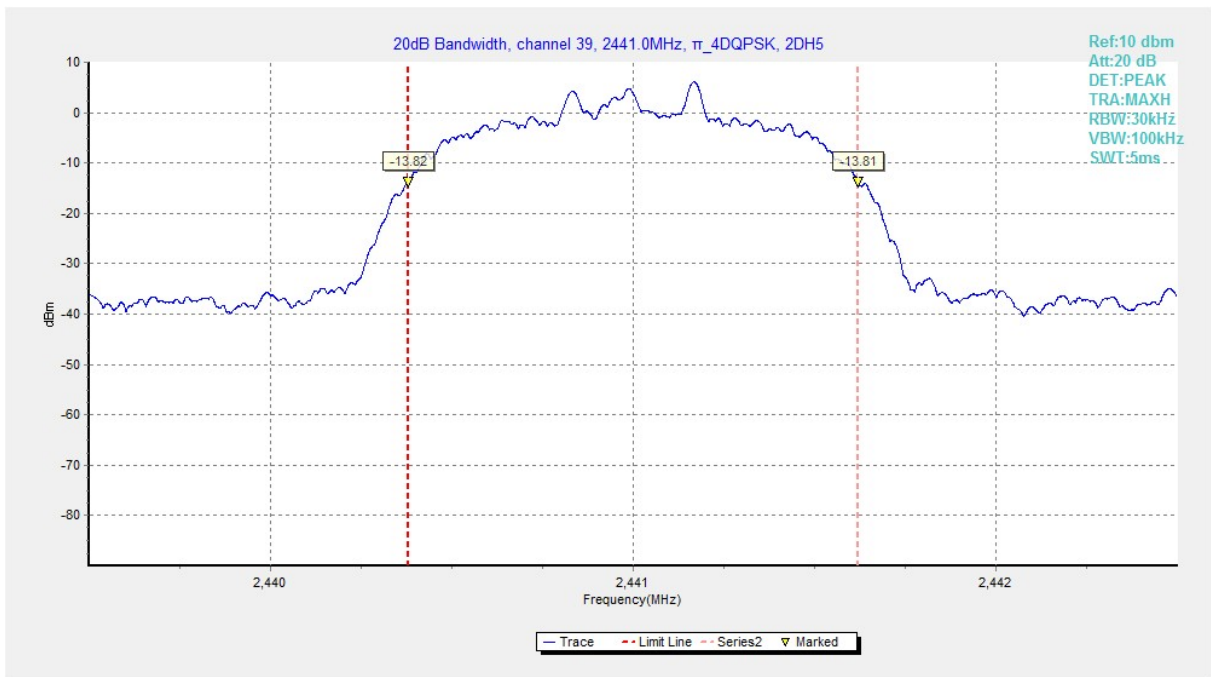


Fig. 73 20dB Bandwidth (π /4 DQPSK, Ch 39)

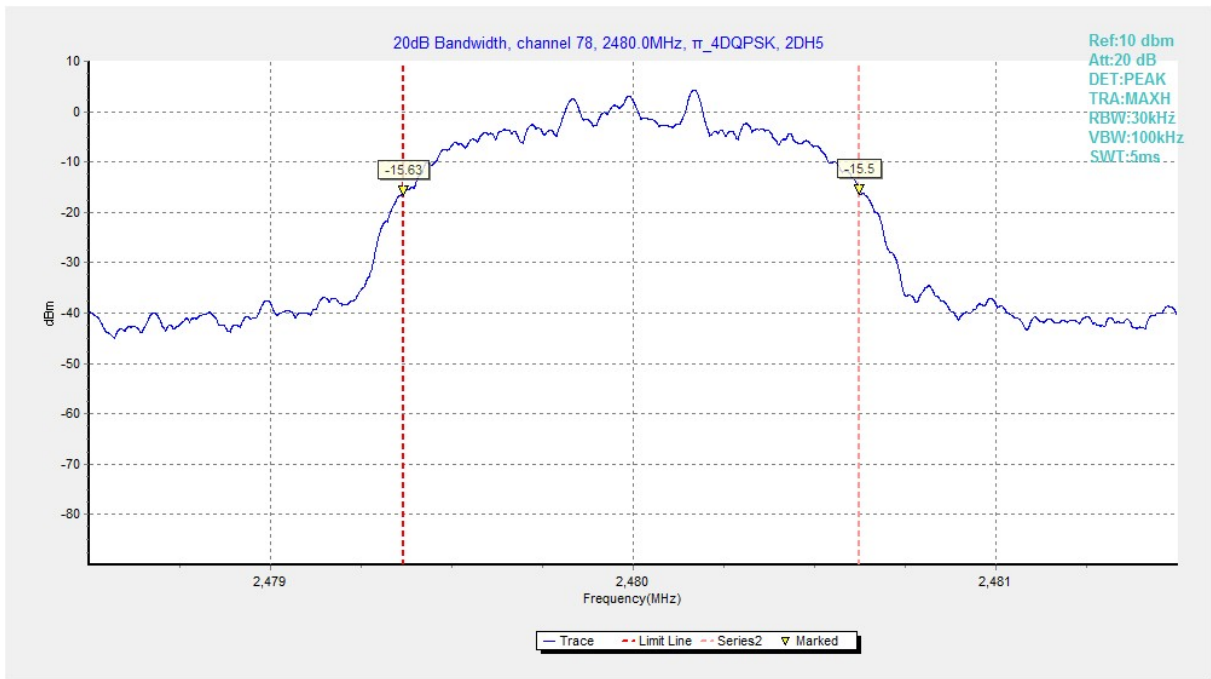


Fig. 74 20dB Bandwidth ($\pi/4$ DQPSK, Ch 78)

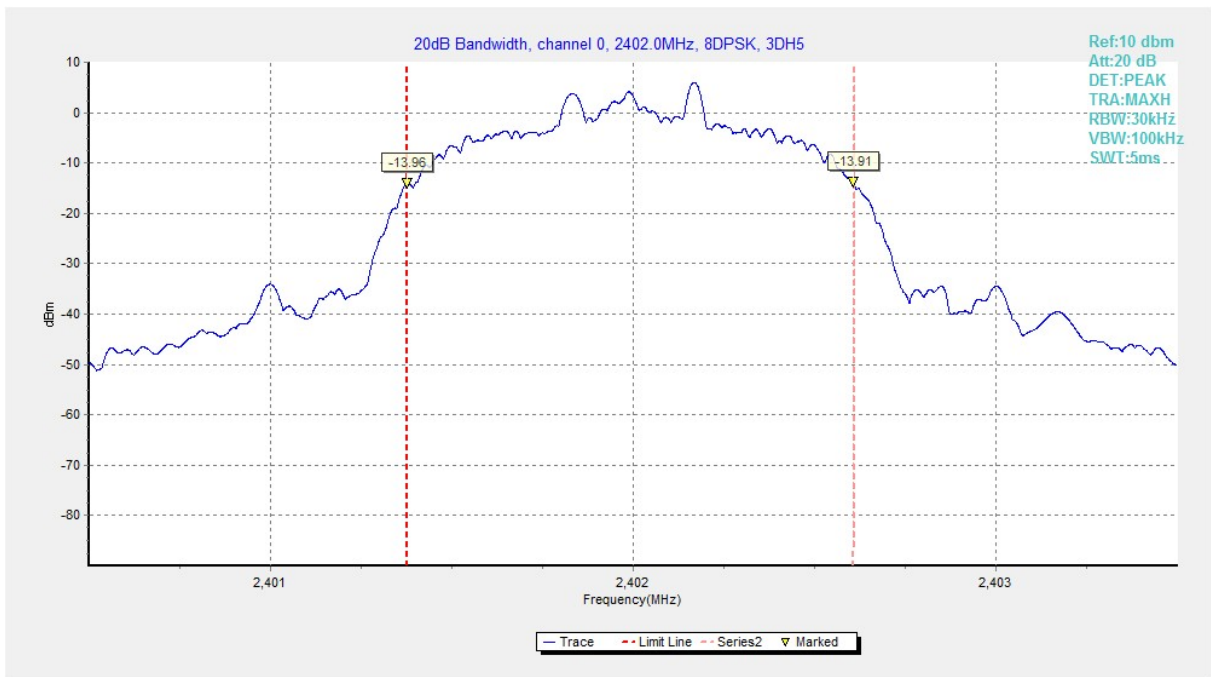


Fig. 75 20dB Bandwidth (8DPSK, Ch 0)

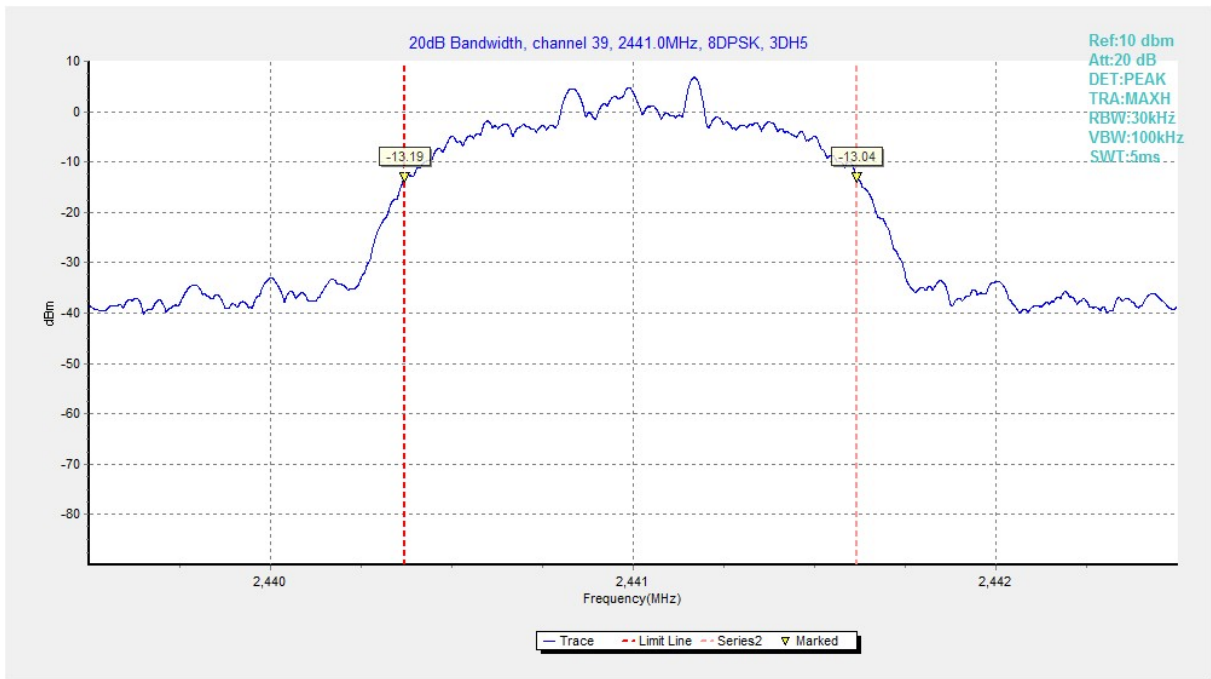


Fig. 76 20dB Bandwidth (8DPSK, Ch 39)

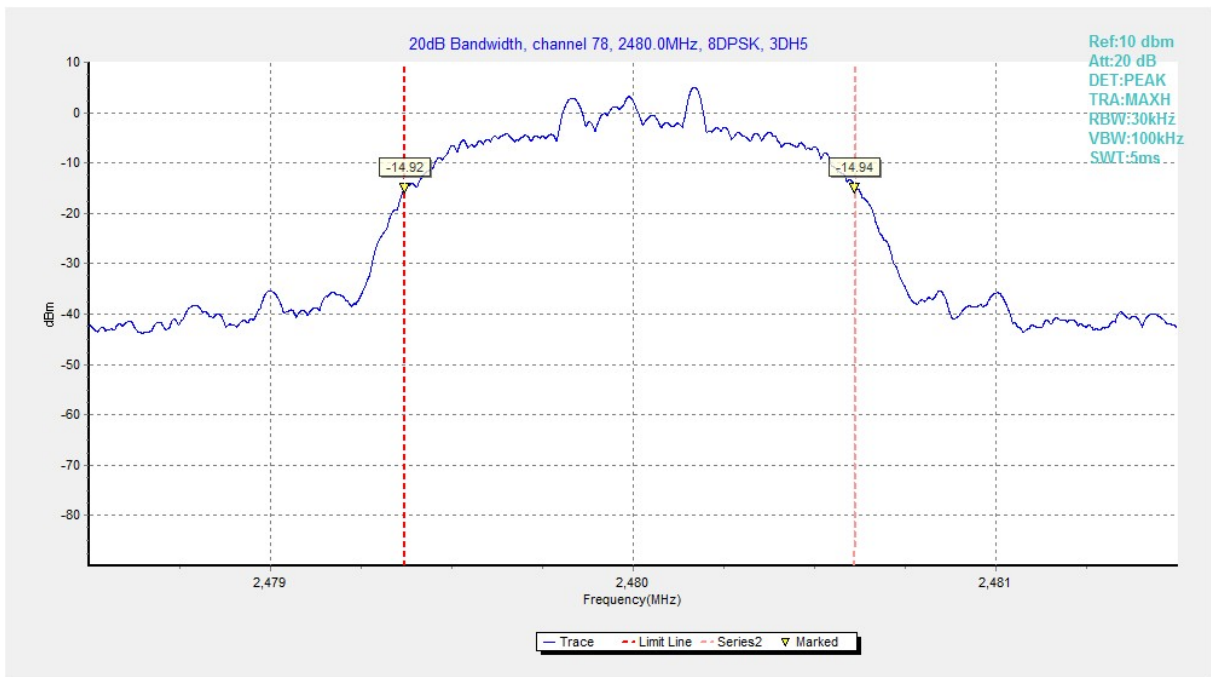


Fig. 77 20dB Bandwidth (8DPSK, Ch 78)



A.6 Time of Occupancy (Dwell Time)

Measurement Limit:

| Standard | Limit |
|--|----------|
| FCC 47 CFR Part 15.247(a) & RSS-247 Section 5.1 | < 400 ms |

Measurement Results:

| Mode | Channel | Packet | Dwell Time(ms) | | Conclusion |
|------------------|---------|--------|----------------|--------|------------|
| GFSK | 39 | DH5 | Fig.78 | 309.11 | P |
| | | | Fig.79 | | |
| $\pi/4$ DQPSK | 39 | 2-DH5 | Fig.80 | 305.96 | P |
| | | | Fig.81 | | |
| 8DPSK | 39 | 3-DH5 | Fig.82 | 308.19 | P |
| | | | Fig.83 | | |

See below for test graphs.

Conclusion: Pass

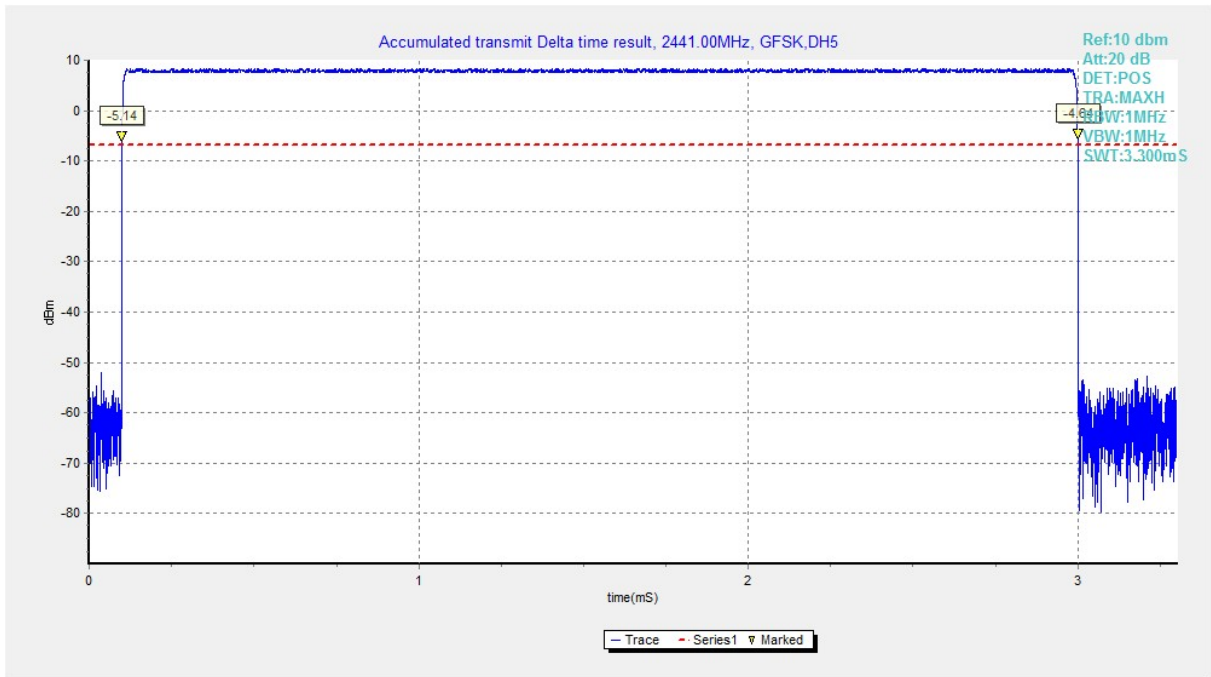


Fig. 78 Time of Occupancy(Dwell Time) (GFSK, Ch39)

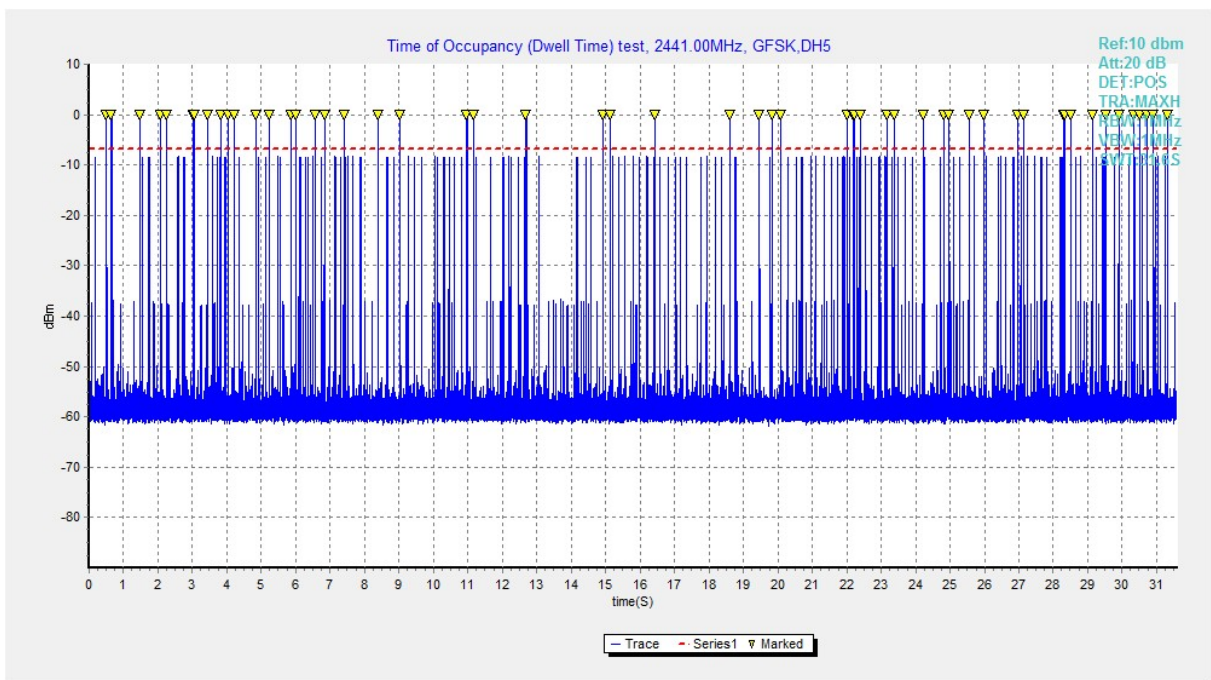


Fig. 79 Time of Occupancy(Dwell Time) (GFSK, Ch39)

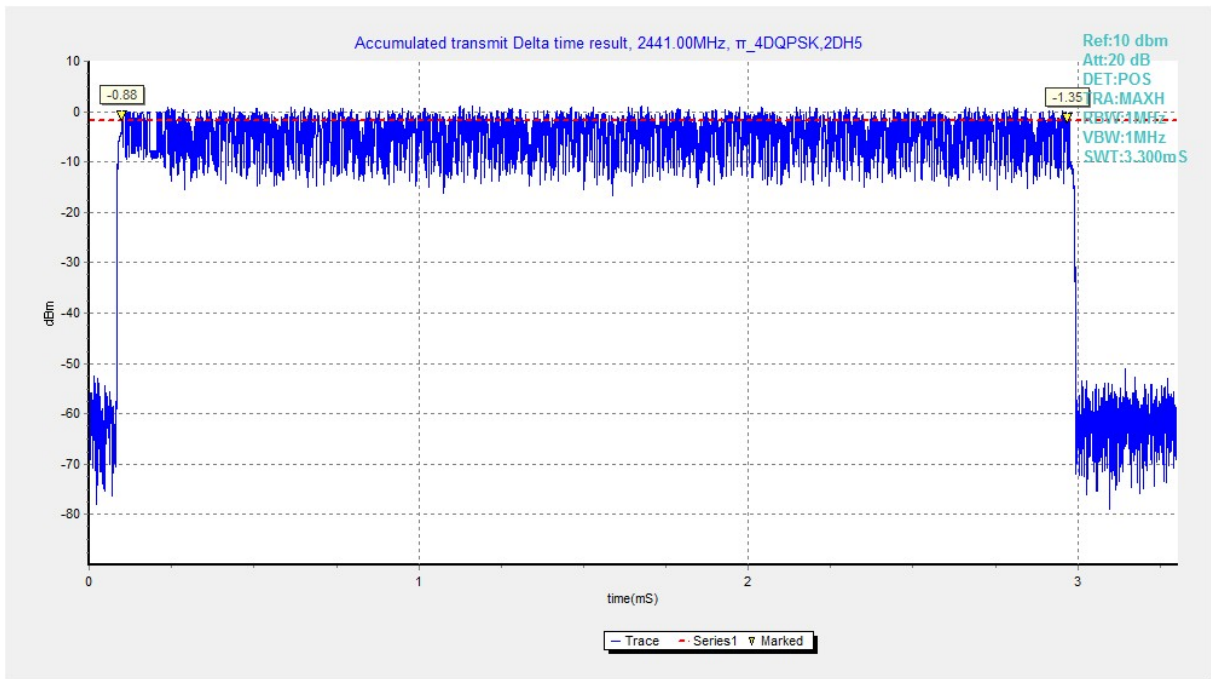


Fig. 80 Time of Occupancy(Dwell Time) ($\pi/4$ DQPSK, Ch39)

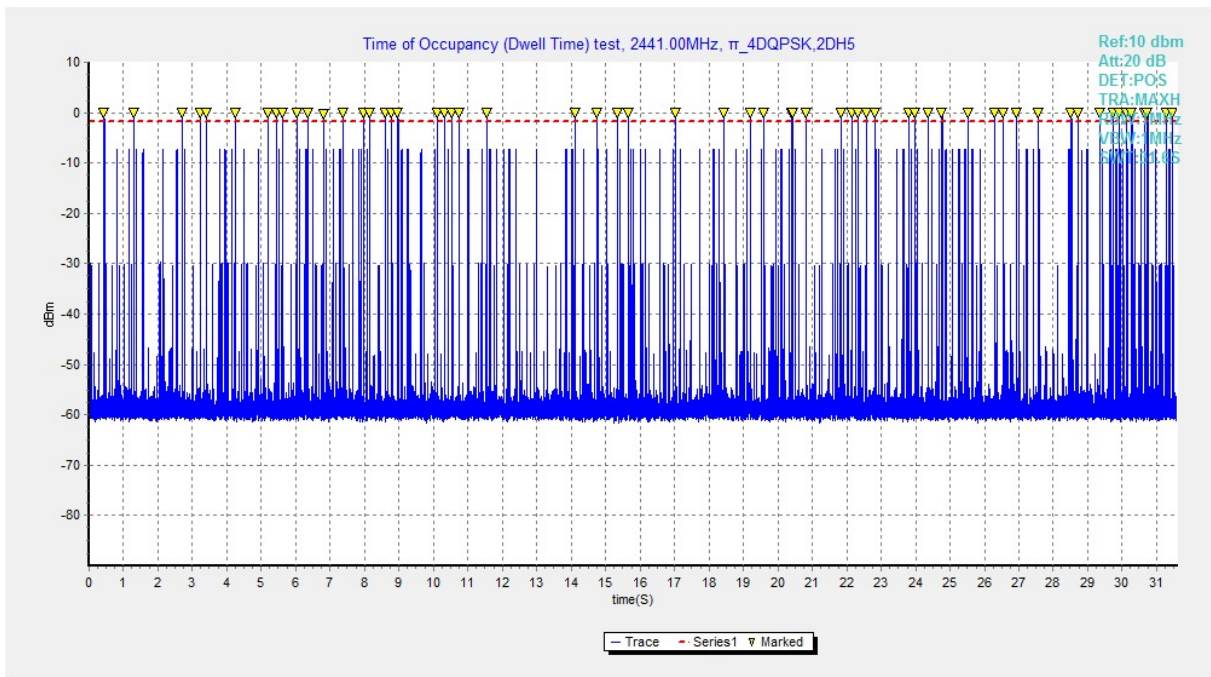


Fig. 81 Time of Occupancy(Dwell Time) ($\pi/4$ DQPSK, Ch39)

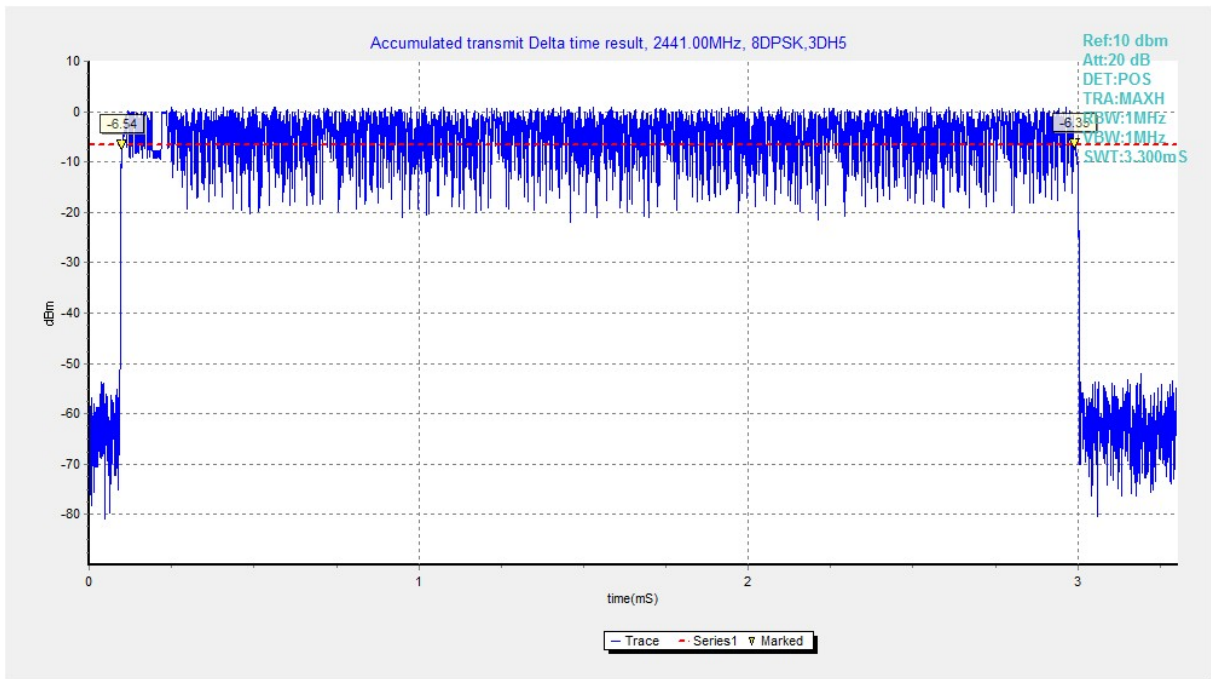


Fig. 82 Time of Occupancy(Dwell Time) (8DPSK, Ch39)

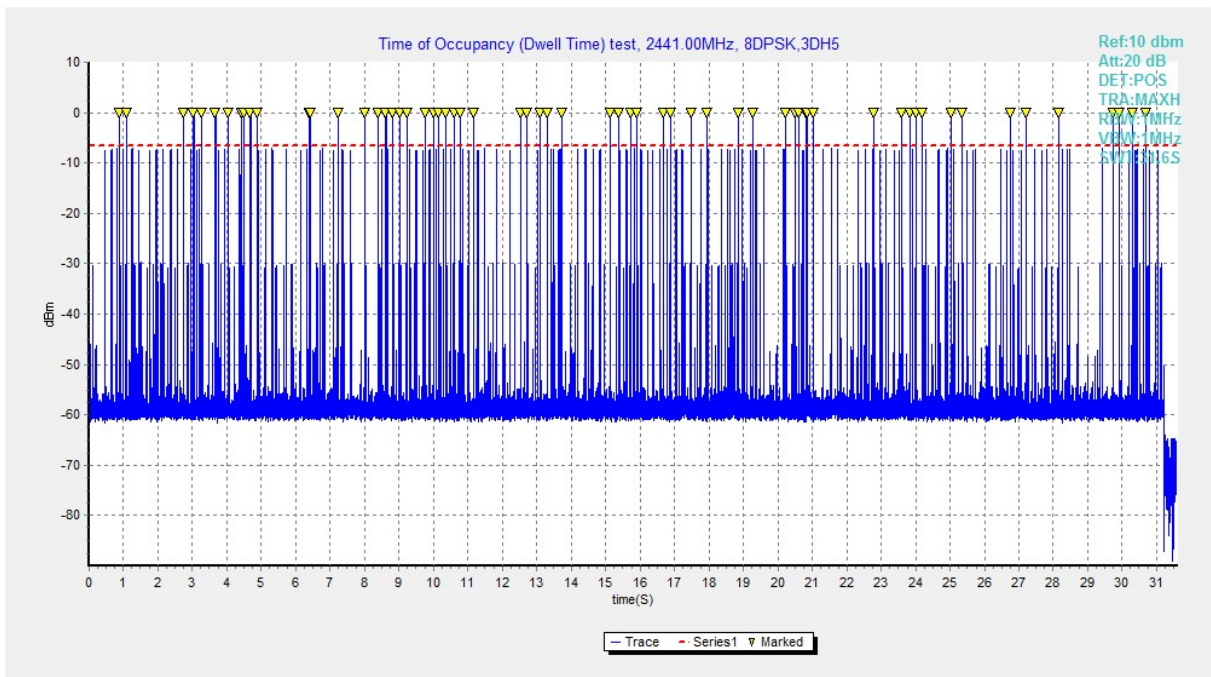


Fig. 83 Time of Occupancy(Dwell Time) (8DPSK, Ch39)



A.7 Number of Hopping Channels

Measurement Limit:

| Standard | Limit |
|---|--------------------------------------|
| FCC 47 CFR Part 15.247(a) & RSS-247 Section 5.1 | At least 15 non-overlapping channels |

Measurement Results:

| Mode | Packet | Number of hopping | | Test result | Conclusion |
|---------------|--------|-------------------|--------|-------------|------------|
| GFSK | DH5 | Fig.84 | Fig.85 | 79 | P |
| $\pi/4$ DQPSK | 2-DH5 | Fig.86 | Fig.87 | 79 | P |
| 8DPSK | 3-DH5 | Fig.88 | Fig.89 | 79 | P |

See below for test graphs.

Conclusion: Pass

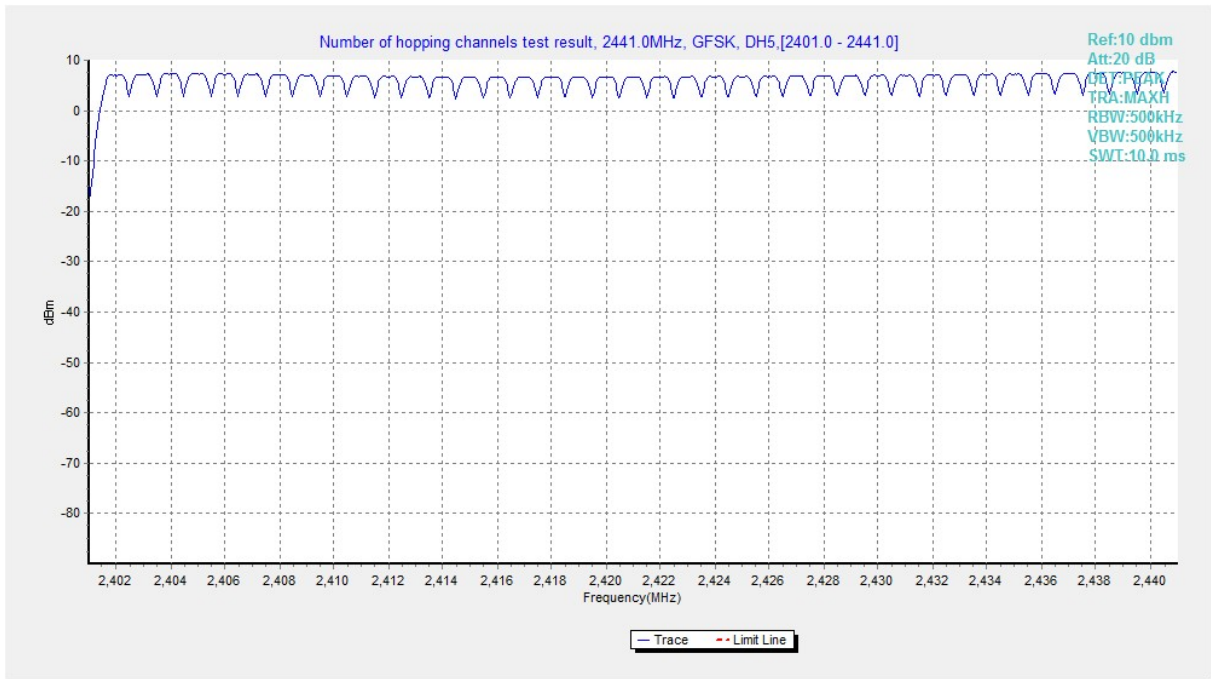


Fig. 84 Hopping channel ch0~39 (GFSK, Ch39)

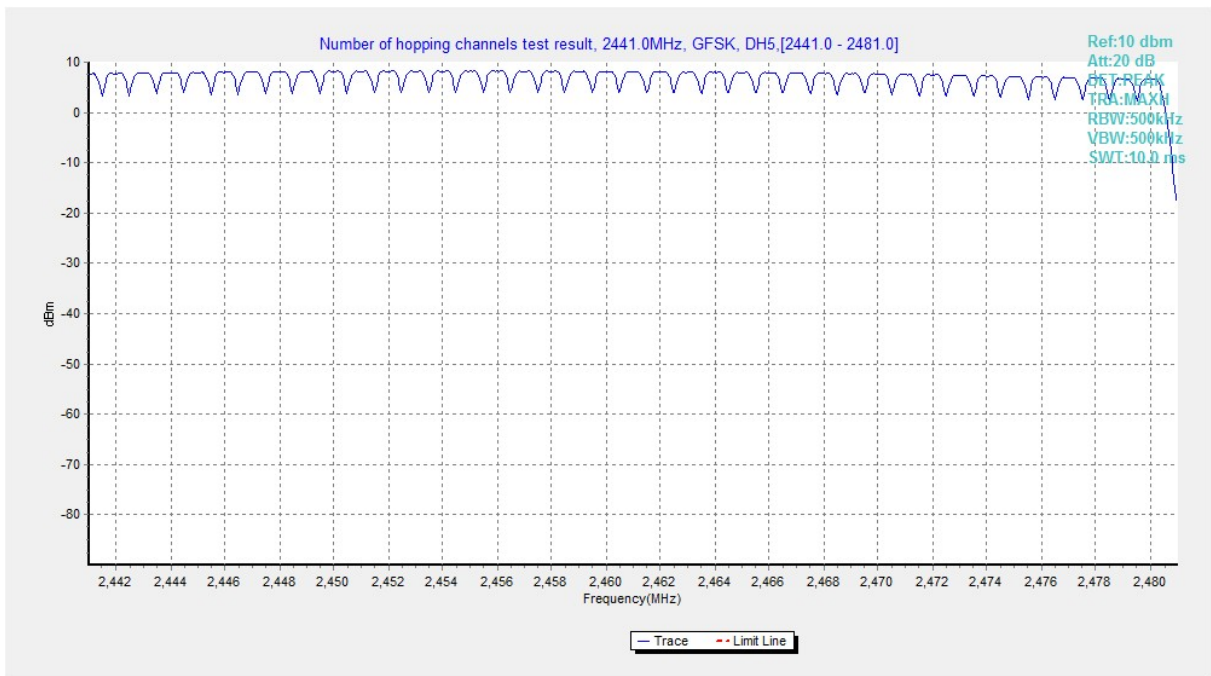


Fig. 85 Hopping channel ch39~78 (GFSK, Ch39)

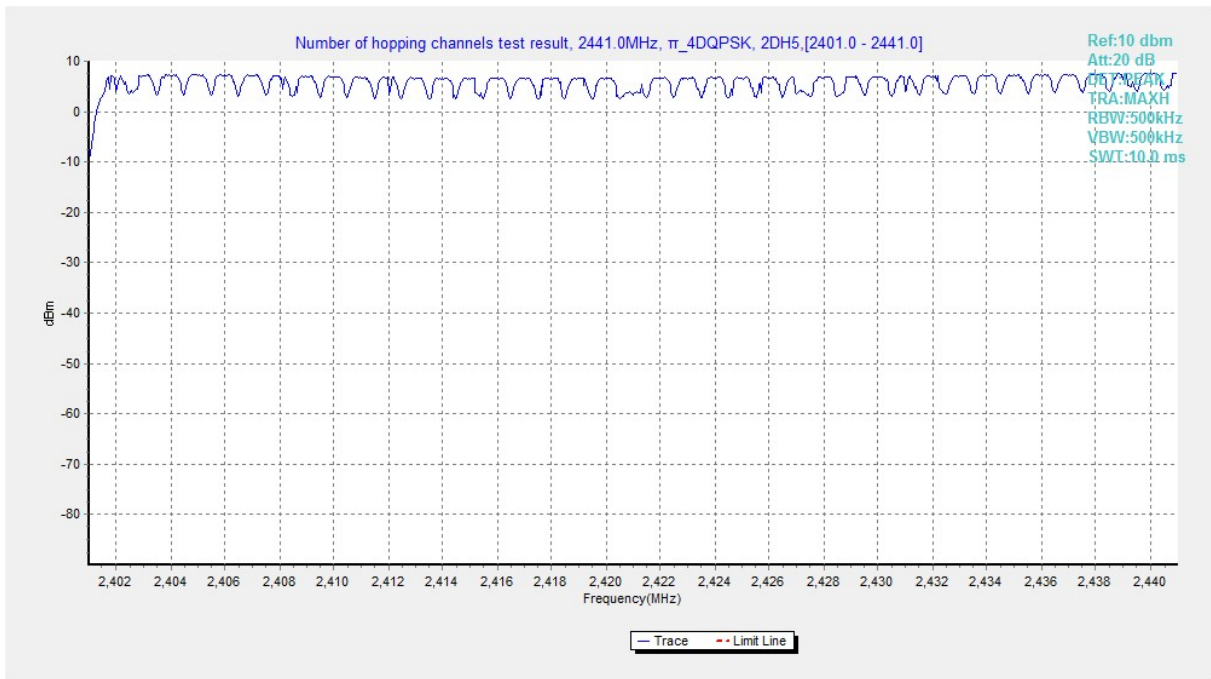


Fig. 86 Hopping channel ch0~39 ($\pi/4$ DQPSK, Ch39)

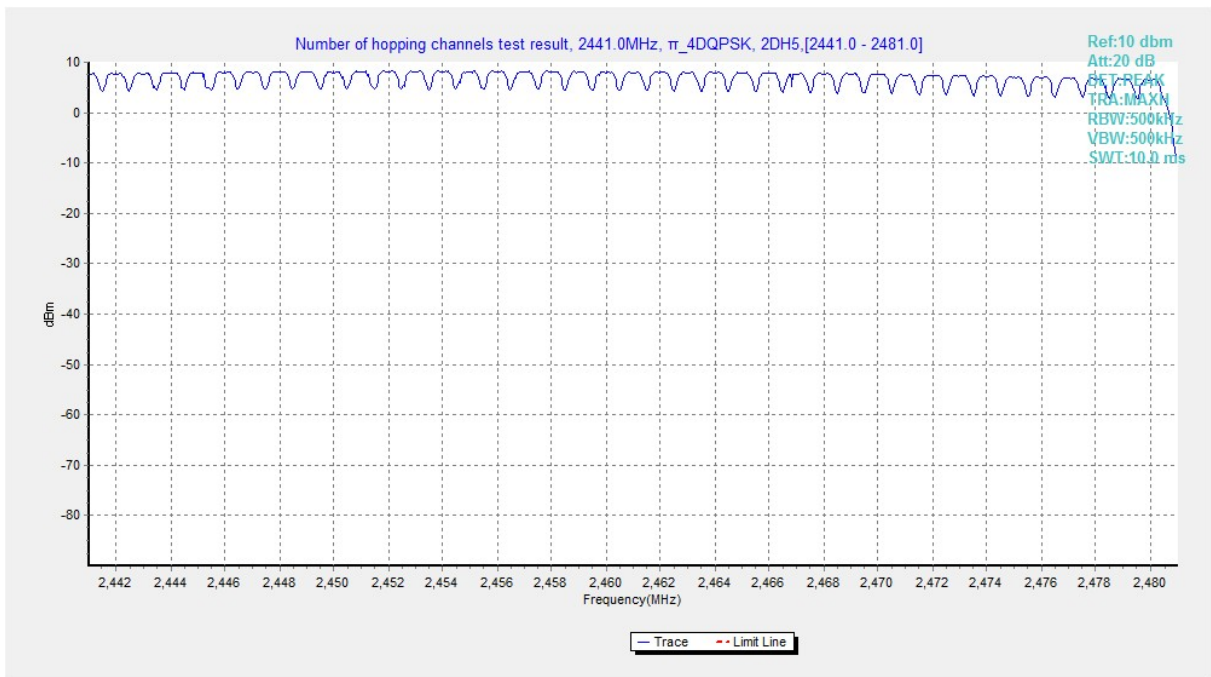


Fig. 87 Hopping channel ch39~78 ($\pi/4$ DQPSK, Ch39)

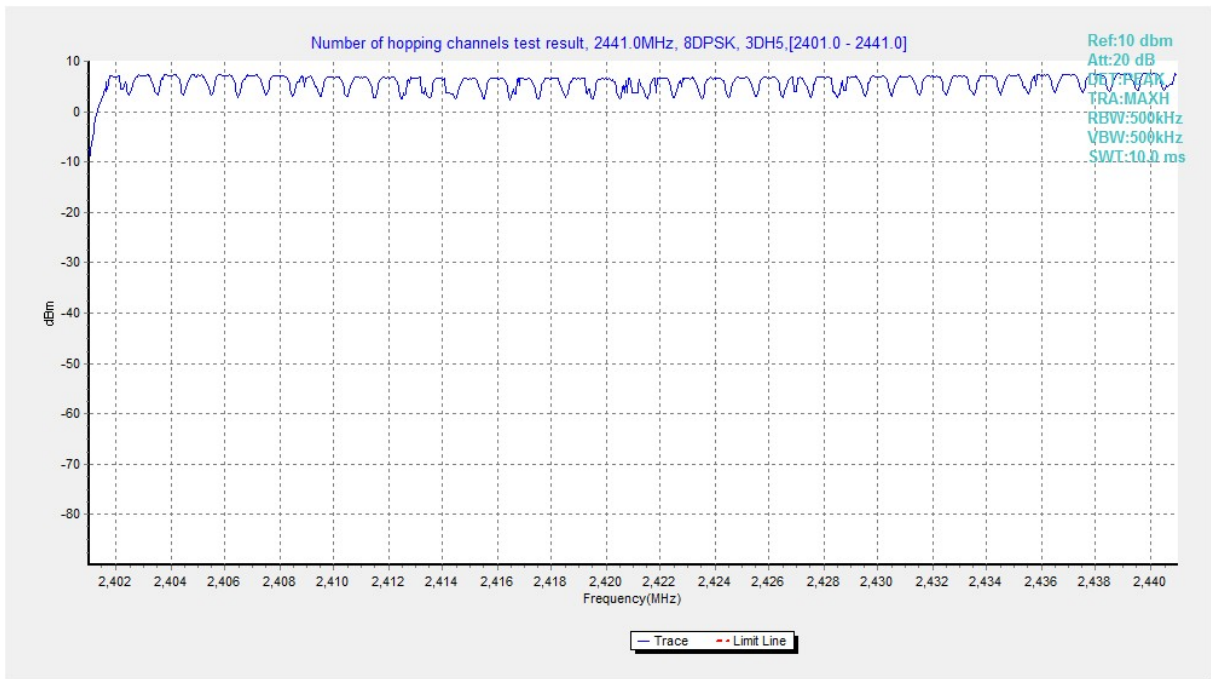


Fig. 88 Hopping channel ch0~39 (8DPSK, Ch39)

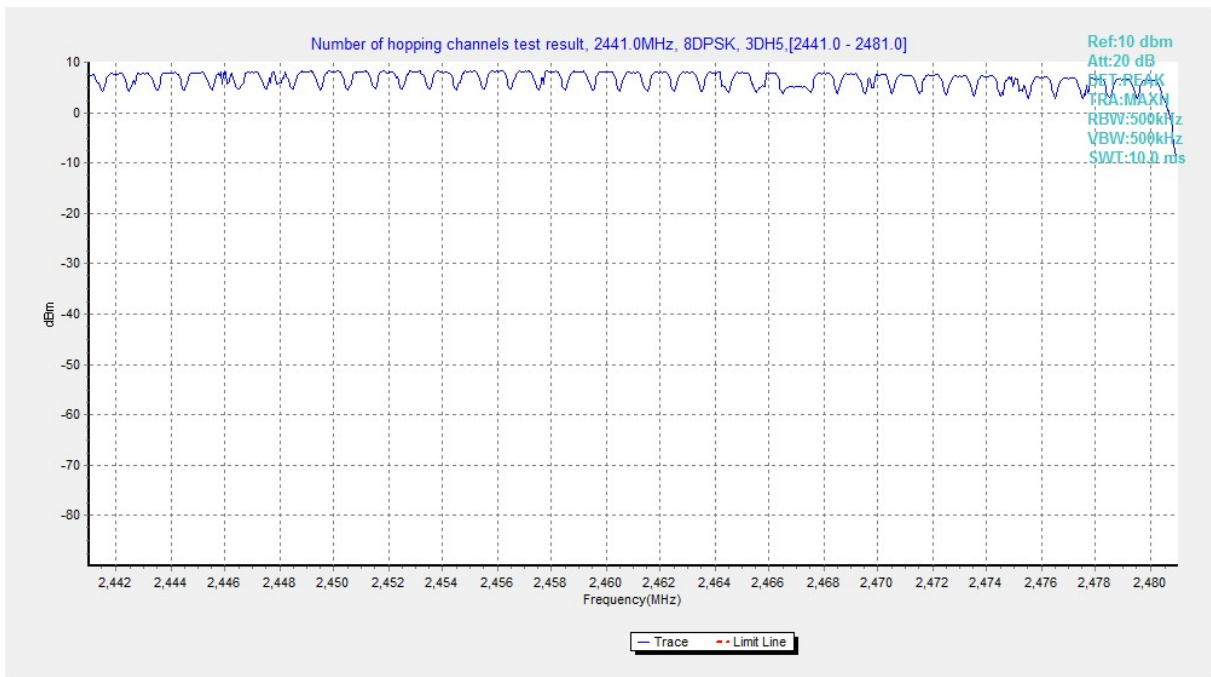


Fig. 89 Hopping channel ch39~78 (8DPSK, Ch39)

A.8 Carrier Frequency Separation

Measurement Limit:

| Standard | Limit |
|---|--|
| FCC 47 CFR Part 15.247(a) & RSS-247 Section 5.1 | By a minimum of 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater |

Measurement Results:

| Mode | Channel | Packet | Separation of hopping channels | Test result (kHz) | Conclusion |
|---------------|---------|--------|--------------------------------|-------------------|------------|
| GFSK | 39 | DH5 | Fig.90 | 1005.75 | P |
| $\pi/4$ DQPSK | 39 | 2-DH5 | Fig.91 | 1001.25 | P |
| 8DPSK | 39 | 3-DH5 | Fig.92 | 1192.50 | P |

See below for test graphs.

Conclusion: Pass

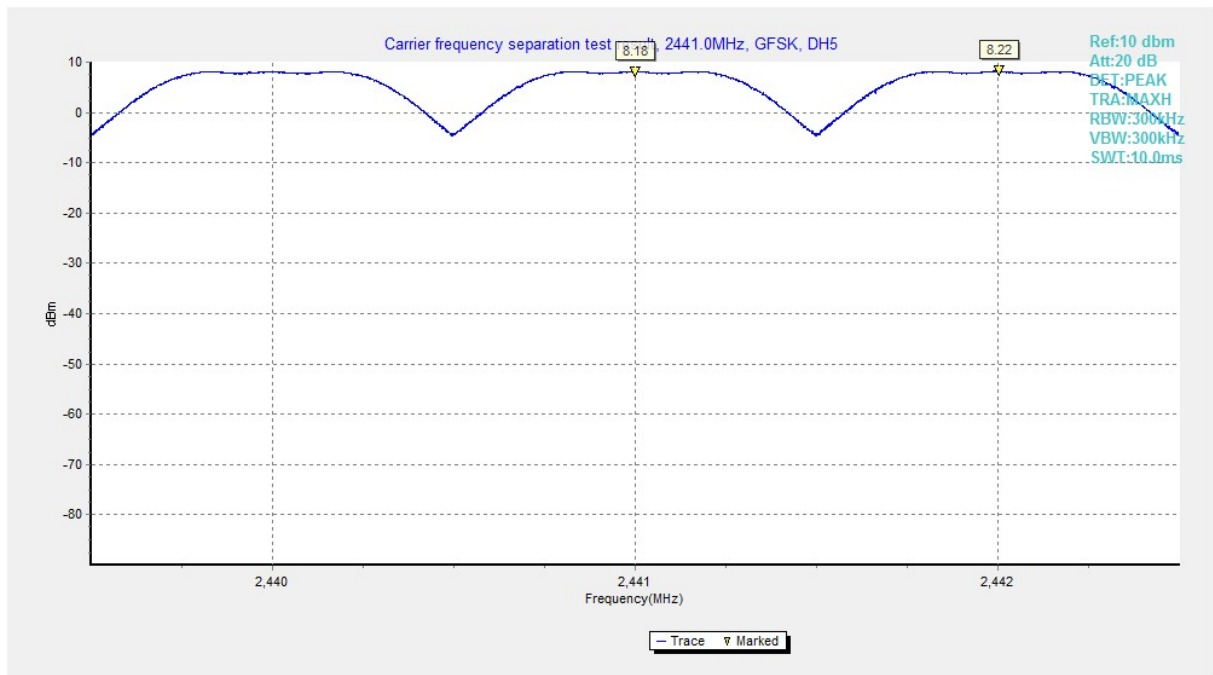


Fig. 90 Carrier Frequency Separation (GFSK, Ch39)

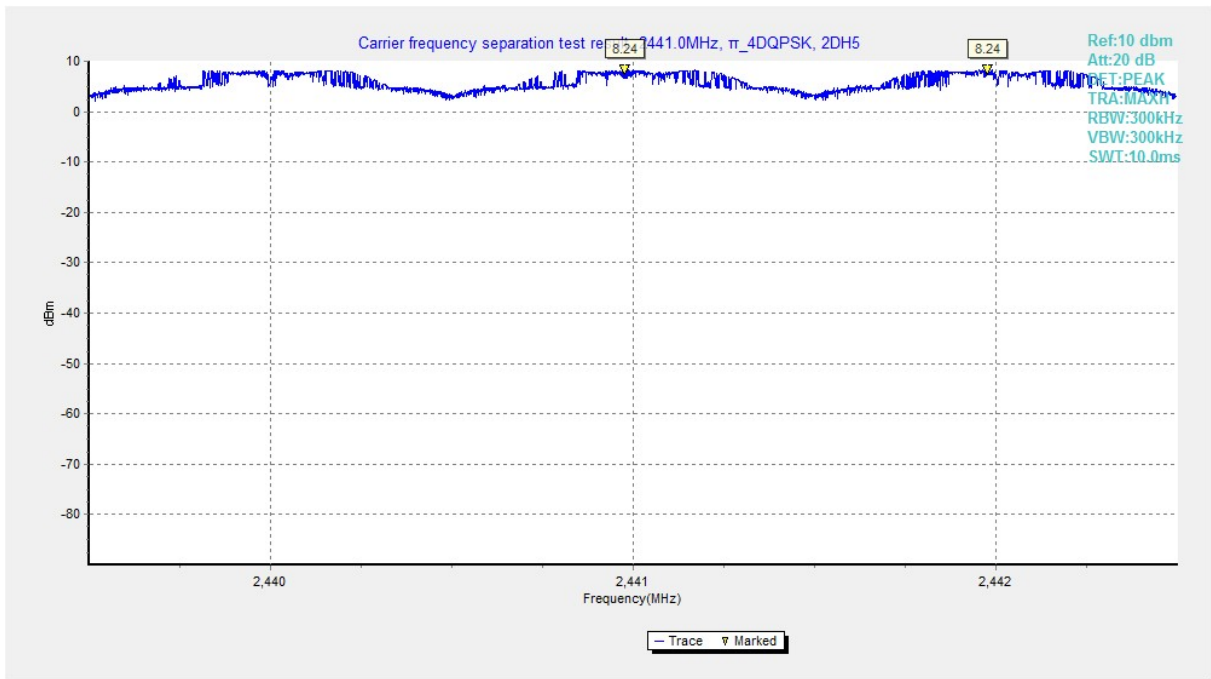


Fig. 91 Carrier Frequency Separation (π /4 DQPSK, Ch39)

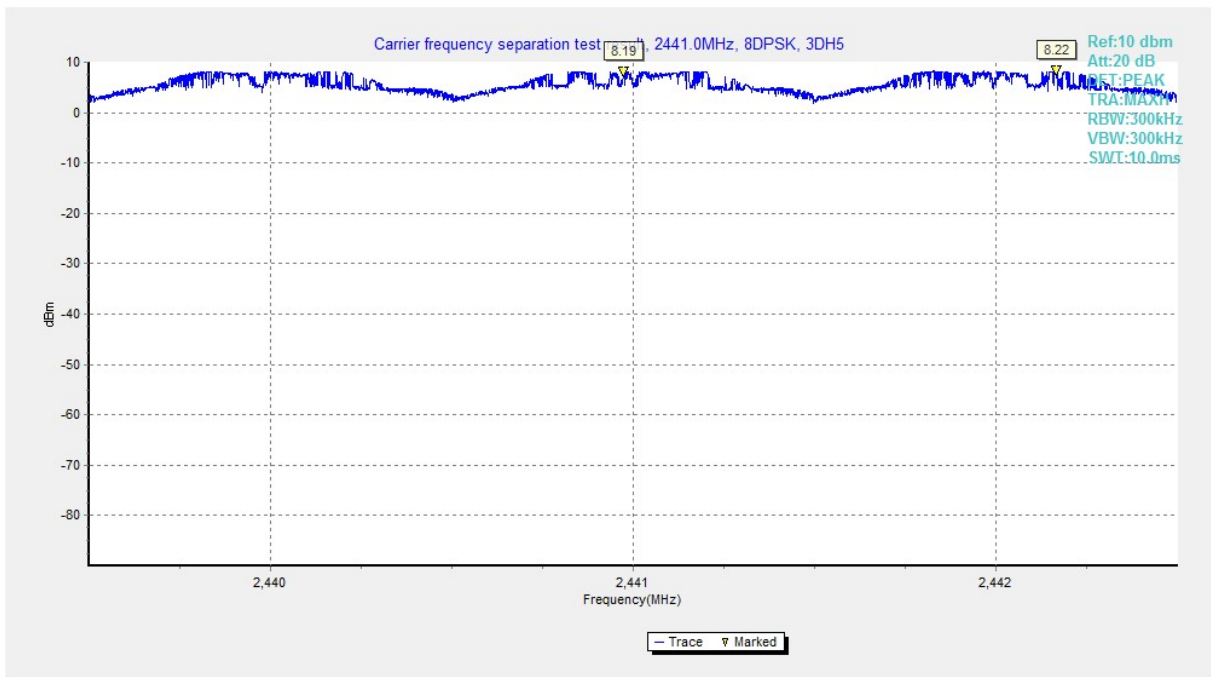


Fig. 92 Carrier Frequency Separation (8DPSK, Ch39)

A.9 99% Occupied Bandwidth

Measurement Limit:

| Standard | Limit |
|---------------------|-------|
| RSS-Gen section 6.7 | / |

Measurement Result:

| Mode | Channel | Occupied Bandwidth (kHz) | | conclusion |
|---------------|---------|--------------------------|---------|------------|
| GFSK | 0 | Fig.93 | 874.28 | / |
| | 39 | Fig.94 | 837.78 | |
| | 78 | Fig.95 | 872.28 | |
| $\pi/4$ DQPSK | 0 | Fig.96 | 1162.71 | / |
| | 39 | Fig.97 | 1174.70 | |
| | 78 | Fig.98 | 1180.20 | |
| 8DPSK | 0 | Fig.99 | 1177.71 | / |
| | 39 | Fig.100 | 1195.70 | |
| | 78 | Fig.101 | 1195.70 | |

See below for test graphs.

Conclusion: Pass

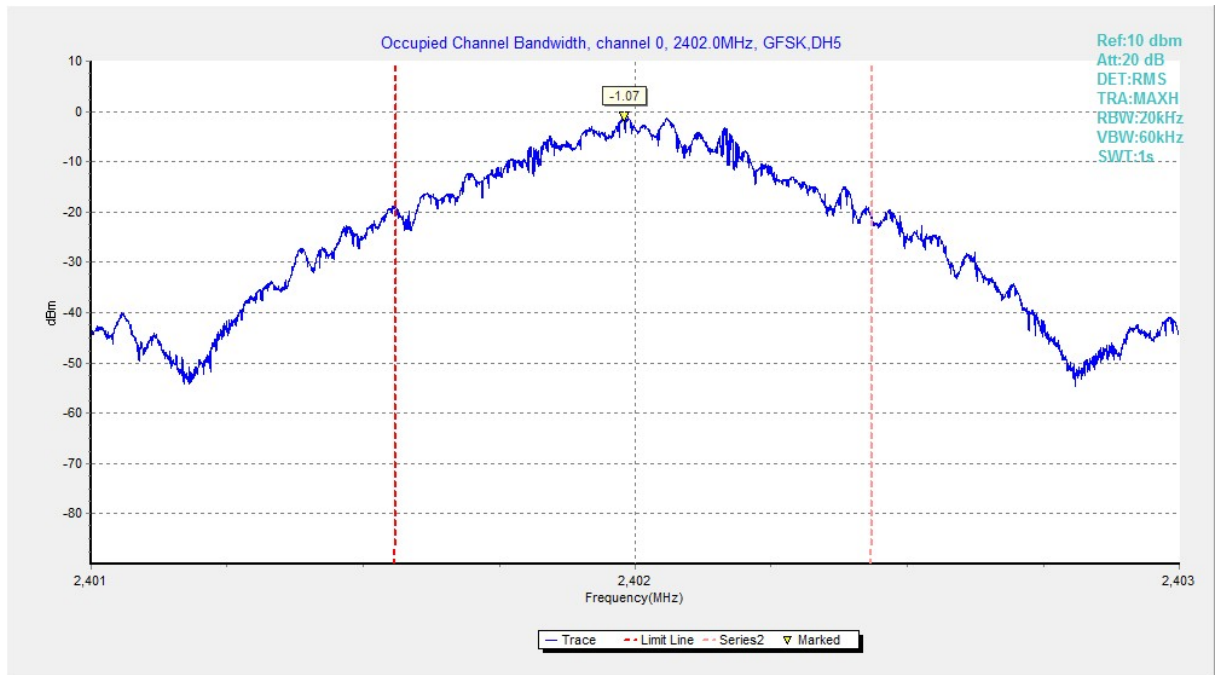


Fig. 93 99% Occupied Bandwidth (GFSK, Ch 0)

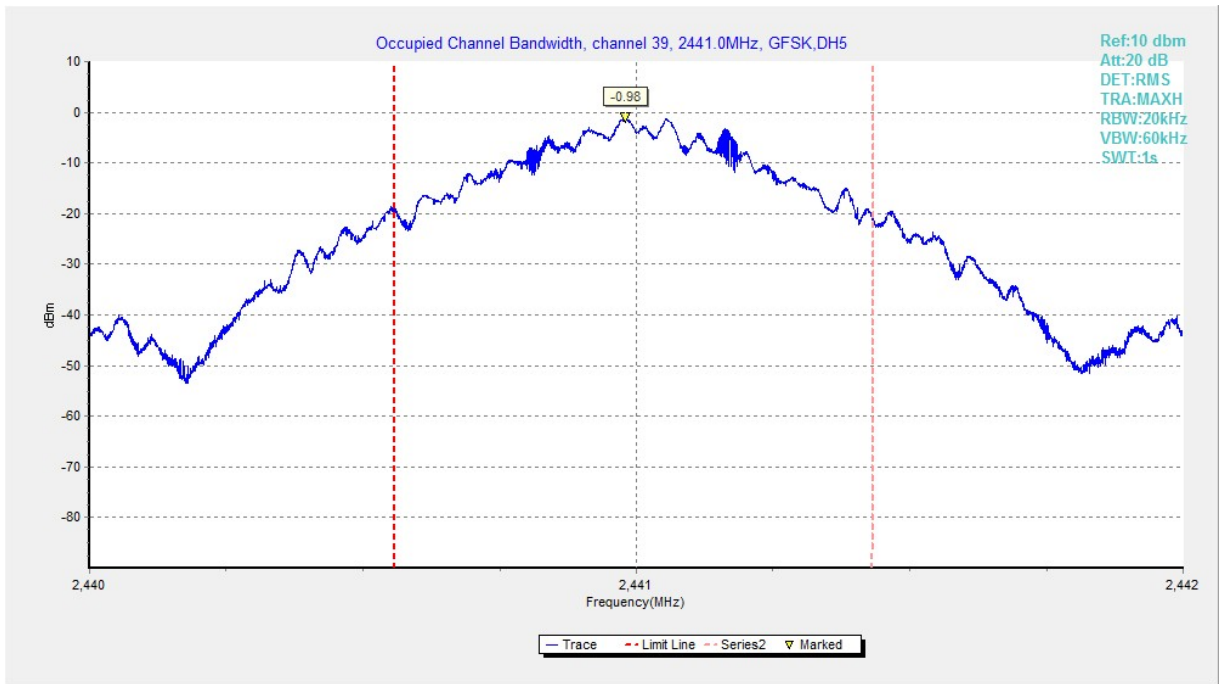


Fig. 94 99% Occupied Bandwidth (GFSK, Ch 39)

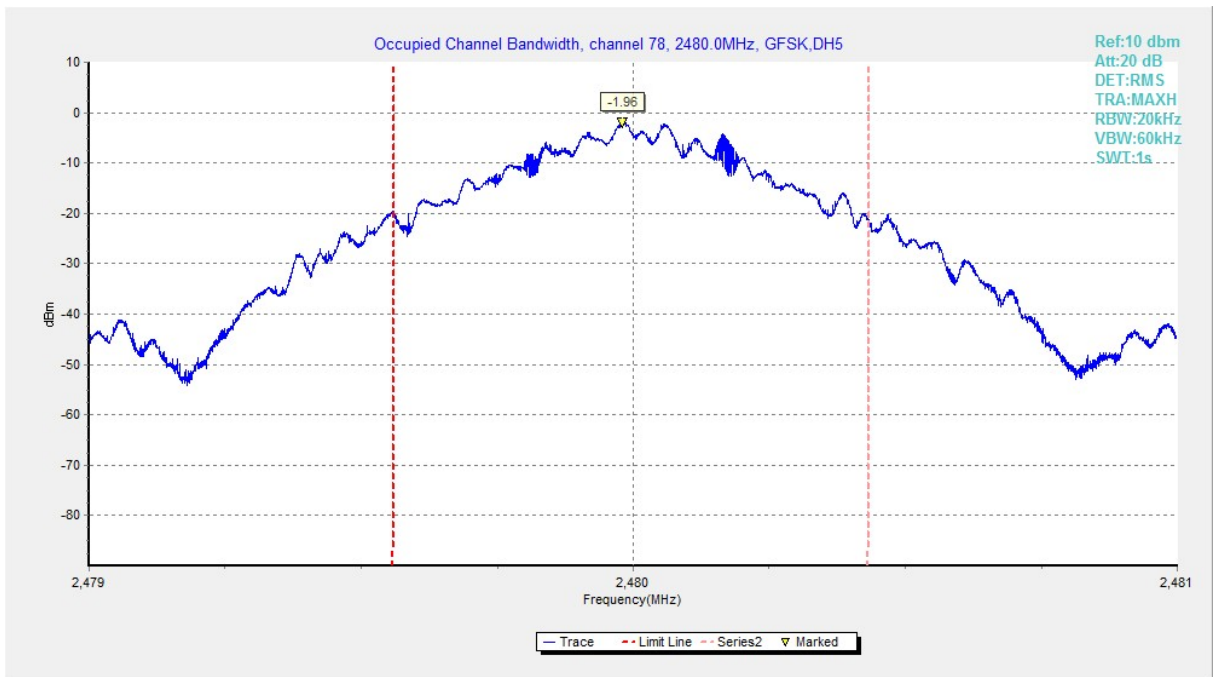


Fig. 95 99% Occupied Bandwidth (GFSK, Ch 78)

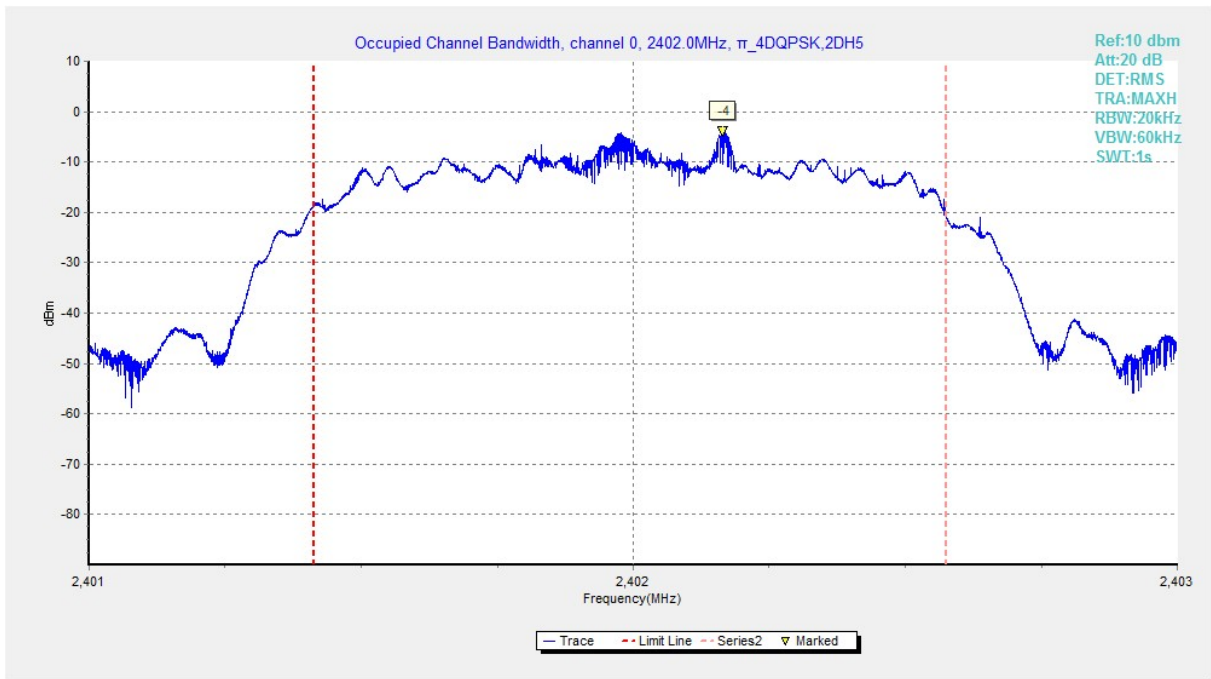


Fig. 96 99% Occupied Bandwidth ($\pi/4$ DQPSK, Ch 0)

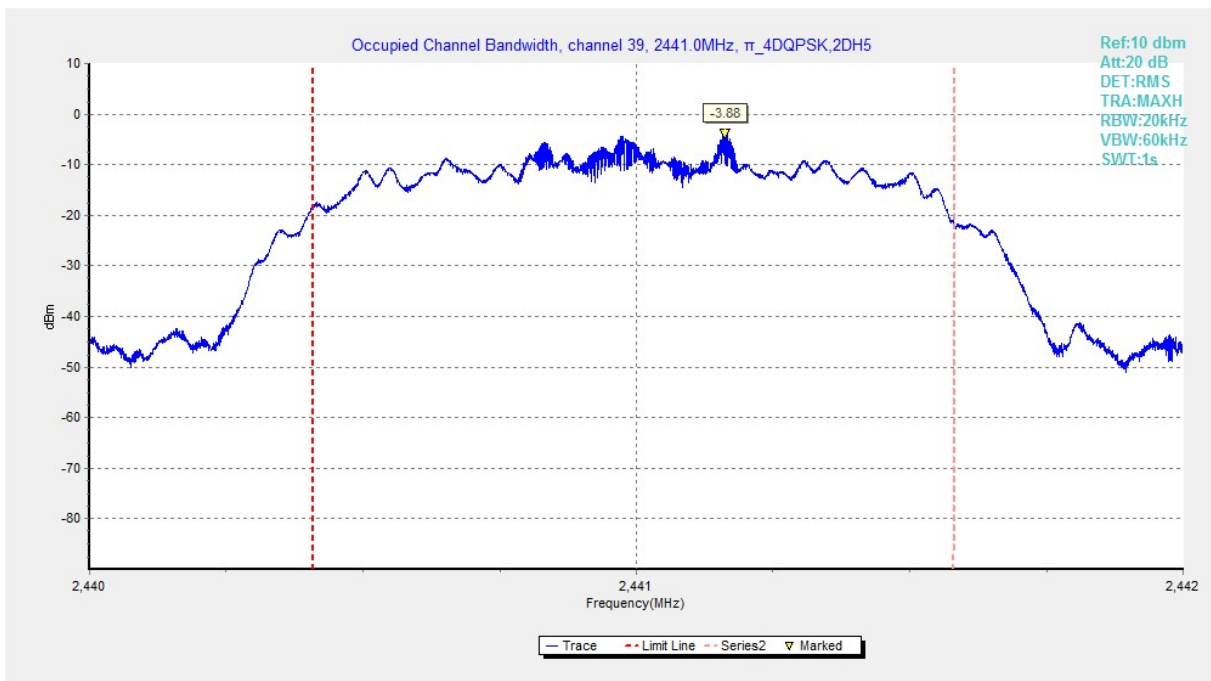


Fig. 97 99% Occupied Bandwidth ($\pi/4$ DQPSK, Ch 39)

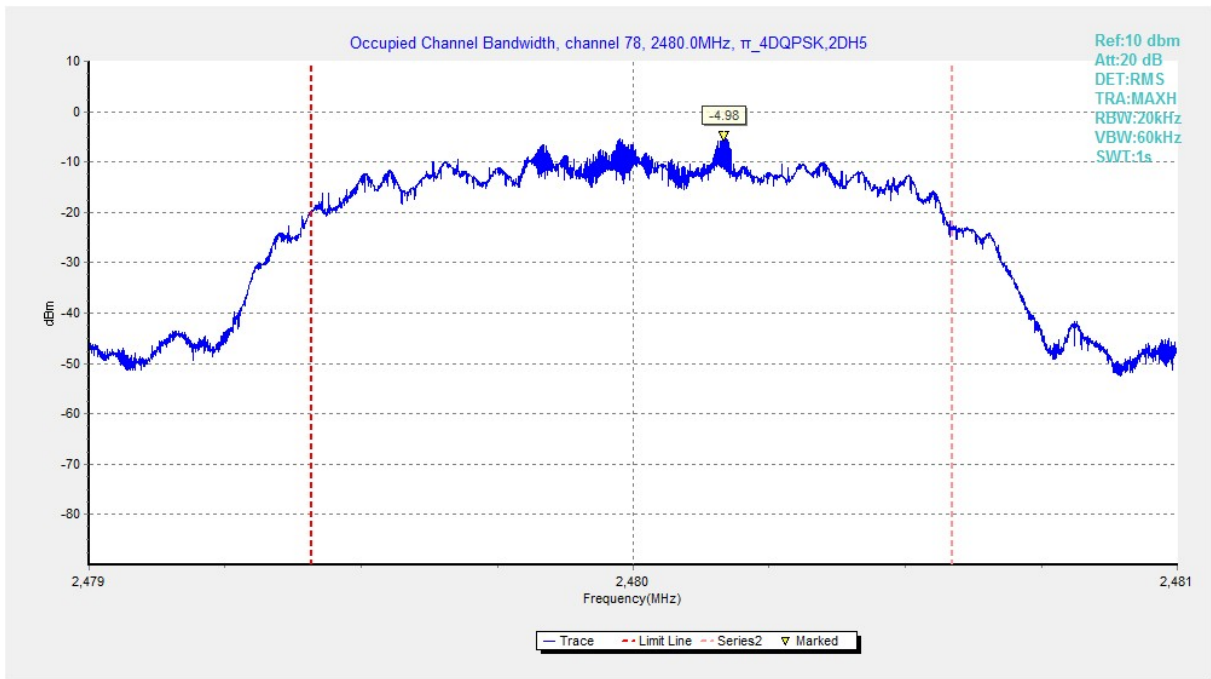


Fig. 98 99% Occupied Bandwidth ($\pi/4$ DQPSK, Ch 78)

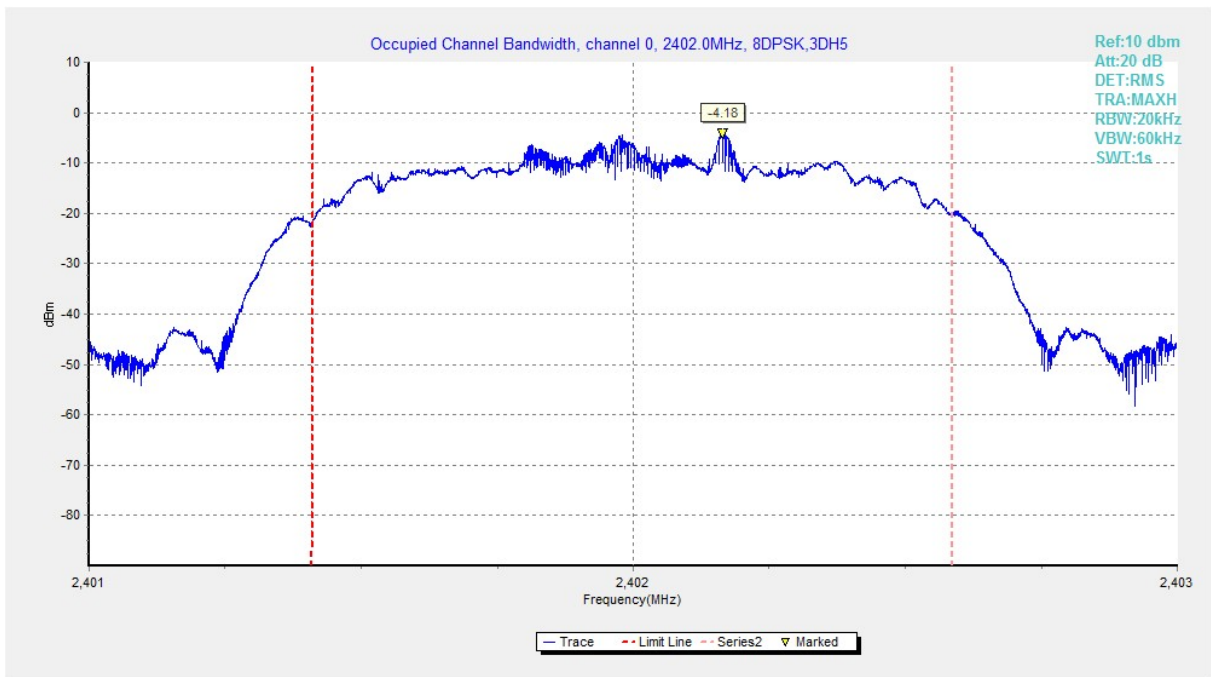


Fig. 99 99% Occupied Bandwidth (8DPSK, Ch 0)

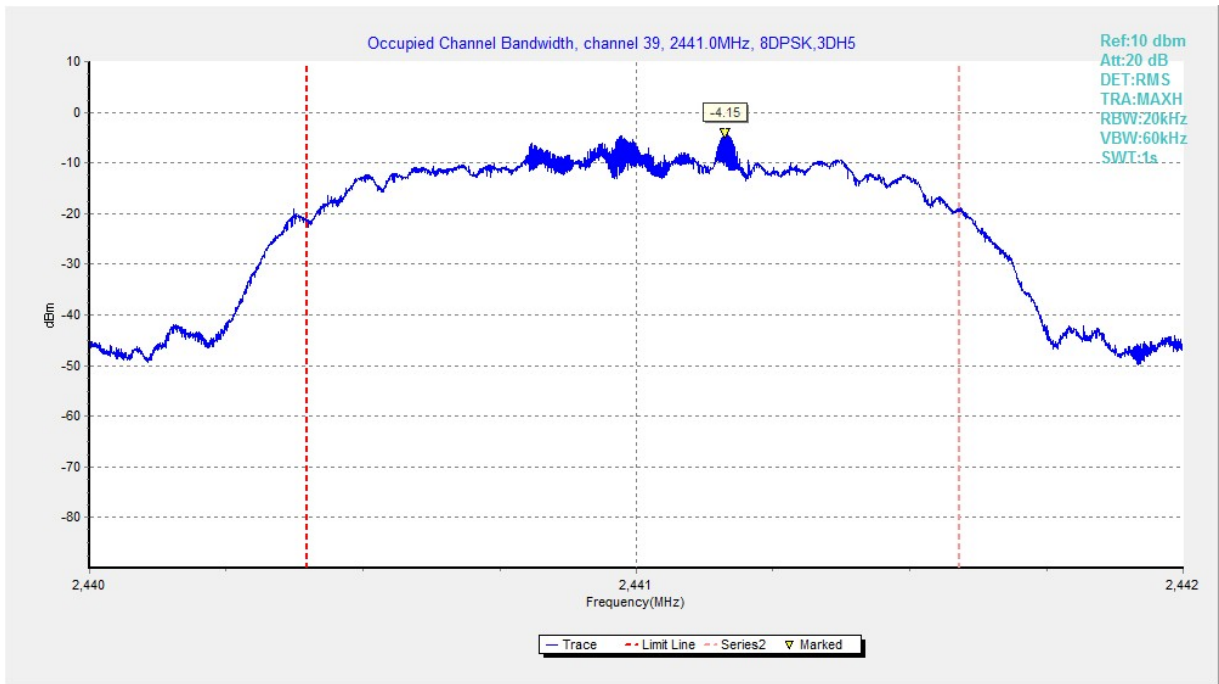


Fig. 100 99% Occupied Bandwidth (8DPSK, Ch 39)

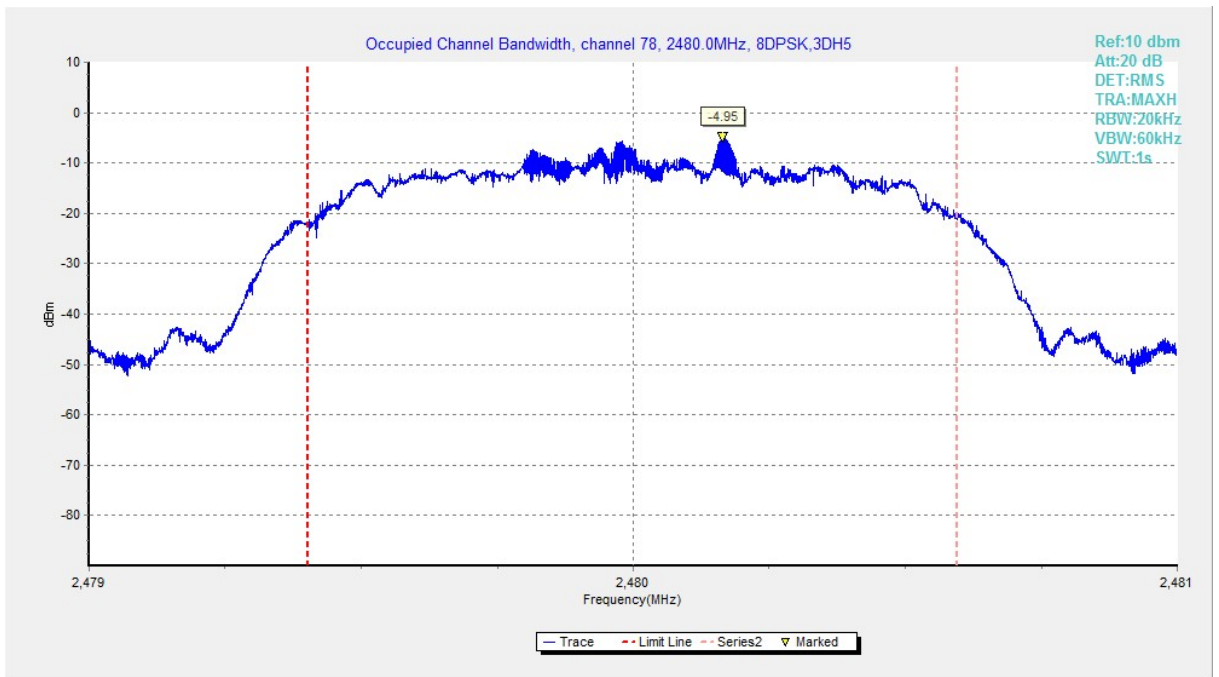


Fig. 101 99% Occupied Bandwidth (8DPSK, Ch 78)

*****END OF REPORT*****